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Opinions expressed by the authors of studies do not necessarily reflect the official viewpoint of the OeNB.

R E P O R T S

Austrian Financial System Benefits from Good Economic Conditions

Positive Economic Outlook – Global Imbalances Pose Ongoing Risks

In the past quarters, the industrialized and emerging market economies have grown at a dynamic pace. Moreover, forecasts – above all for the euro area and Japan – are favorable. In the U.S.A., though, growth has lost some momentum at a high level. A disorderly correction of global imbalances remains the main risk to cyclical developments. Oil prices have eased recently, improving the outlook for inflation, but an inflation-related rise in interest rates could nevertheless weaken growth prospects. While spreads on emerging economies' foreign currency-denominated bonds have risen in recent months, they are still at historically low levels.

Most Central and Eastern European countries (CEECs) have been posting growth rates far exceeding those in the euro area and have seen a generally strong rise in (foreign currency) loans. Some of these countries, however, have large and growing external imbalances. At the end of September 2006, the exchange rates of most Central and Eastern European (CEE) currencies were unchanged or stronger against the euro than at end-March, whereas the yields spreads of national currency-denominated government bonds widened for the most part. A change in international investors' risk tolerance represents a source of risk especially for countries in need of high external funding.

Corporate Risk Perspective Worsens Slightly

Against the background of favorable economic developments, Austrian corporate profits have risen further. The

marked expansion of investment activity reflects, among other things, investor confidence in future developments, reinforced also by favorable economic forecasts. Until recently, the corporate risk perspective was positive, though it deteriorated a bit in the first half of 2006. While falling prices on stock markets during the second quarter of 2006 and stepwise interest rate hikes have worsened corporate borrowing conditions slightly, they nevertheless remain favorable by historical standards. However, as variable rate loans represent a high proportion of corporate borrowing, companies' financing costs have gone up recently. Enterprises continue to procure a considerable amount of funding through capital markets – the issuing volumes of stocks and bonds alike continued to make substantial headway in the first half of 2006.

Risk to Households' Financial Position Intensifies

Although real income growth remained subdued, Austrian households enlarged their financial assets. Stocks, bonds and mutual funds shares accounted for nearly half of the rise in household financial assets. However, following a steady rise in asset values for some time, households were for the first time in quite a while faced with valuation losses of the assets they had invested in capital markets. On the bright side, the latest interest rate increases had a positive impact also on households' interest income on bank deposits. Households remain keen on foreign currency loans – almost one-third of their outstanding loans is denominated in foreign currencies, mostly (97%) in Swiss francs. As the bulk of euro and foreign cur-

rency loans are at variable rates, households have been exposed to exchange rate and interest rate risks on their borrowings in addition to the price risk on their assets that was realized in the first half of 2006.

Austrian Banking Activity Posts Dynamic Growth

The rise in Austrian banks' profits remained unbroken in 2006. In the first half of 2006, operating profit on a consolidated basis mounted by more than 19% compared to the first half of 2005, augmenting to EUR 4.5 billion. This steep rise is partly a sign of Austrian banks' growing dependence on their highly successful CEE business, which accounts for well over a third of the result in the observation period. Austrian banks' CEE business outside the EU-27 has not played a very important role until recently, but has gained significance in the wake of acquisitions and of the ongoing restructuring within Unicredit Group. Austrian banks' domestic activity has also exhibited clear signs of a lasting recovery. Partly buoyed by the healthy economic environment, fee-based income grew at a robust rate and demand for loans accelerated

noticeably. At 64.1%, the cost-to-income ratio stayed historically low, and the capital ratio remained favorable. Given these healthy profits and enduring high capital ratios, Austrian credit institutions' risk exposure improved further. Stress tests in the major risk categories confirm this assessment.

In parallel to the expansion of lending cited above, banks' interest margins contracted further, though, dropping to a new low of only 1.03%. Data for banks' new lending and deposit-taking business do not indicate any future improvements in margins. Given these tight margins, banks' profits may well be affected if the currently more favorable assessment of loan quality should be reversed. The continued sizeable share of foreign currency lending to domestic borrowers poses an additional risk, as does the proportion of foreign currency lending by Austrian banks in some of the CEECs, which is also increasing.

Like Austrian banks, Austrian insurance companies are doing well, also drawing on their CEE business success.

Robust International Economy Fuels Recovery of Financial Markets Following Corrections in Spring

Industrialized Countries: Positive Growth Outlook but Downside Risks

Continued Robust Economic Expansion

Although *global economic* prospects remain bright on the whole, there will be downside risks in 2007. According to the World Economic Outlook of the International Monetary Fund (IMF), the global economy will grow by 5.1% in 2006 and by 4.9% in 2007. This means that the IMF's current growth outlook exceeds its spring outlook by 0.25 percentage point. Inflation should rise only temporarily in both industrialized and emerging economies just to fall to 2.3% and 5% in 2007, respectively. In other words, the positive trends of the past few years should continue with relatively low inflation and robust growth.

In *industrialized countries*, economic growth in the first half of 2006 remained buoyant on the whole, even though oil prices during this period soared to as high as USD 78 in the wake of military action in the Middle East. Oil prices have since fallen notably to below USD 60. Oil price forecasts for mid-2007 range from USD 50 to USD 78 per barrel (Consensus Forecast). Long-term interest rates remained low whereas short-term rates – particularly in the U.S.A. and in other industrialized countries – rose on the back of monetary policy tightening which was initiated and, in some cases, continued in recent quarters. As regards the three largest economic areas, growth momentum in the *U.S.A.*, above all, has continued to slow gradually from

a high level. This trend is likely to continue in the second half of 2006 due to the visible cooling of the real-estate market and to weaker private consumption. In the *euro area*, growth in the first half of 2006 continued to accelerate and broaden owing to, *inter alia*, a positive development in fixed capital formation. Germany and Italy, which had exhibited lower growth rates than the euro area on average in the past, also registered far stronger economic momentum. For the remainder of 2006, the European Commission predicts a somewhat slower continuation of the healthy growth performance.

In *Japan*, the economy continued to recover. In the three largest economic areas, unemployment fell in the past few quarters while capacity utilization continued to increase and, in some cases, is already at an elevated level.

At the same time, inflation rose on the back of higher energy prices, in particular. If oil prices, which have recently fallen significantly, remain at a relatively low level, energy price inflation rates can be anticipated to slow down. However, the U.S.A., in particular, experienced a marked rise in core inflation while the euro area saw producer prices come under greater upward pressure but core inflation in this region has so far remained low. In Japan, the period of deflation now appears to be over. For 2007, the IMF's current outlook assumes continued buoyant, albeit somewhat slower, economic momentum, with growth rates hovering around the long-term average, as well as somewhat higher inflation. This

Table 1

IMF World Economic Outlooks of April and September 2006

	GDP growth (% on previous year)				Consumer price inflation (% on previous year)			
	2006		2007		2006		2007	
	Apr. 06	Sep. 06	Apr. 06	Sep. 06	Apr. 06	Sep. 06	Apr. 06	Sep. 06
U.S.A.	3.4	3.4	3.3	2.9	3.2	3.6	2.5	2.9
EU-12	2.0	2.4	1.9	2.0	2.1	2.3	2.2	2.4
Japan	2.8	2.7	2.0	2.1	0.3	0.3	0.6	0.7

Source: IMF (World Economic Outlook).

means that, in particular, its current growth outlook for the U.S.A. was revised downward relative to the spring outlook.

The *risks* to this continued positive outlook for economic growth largely point to the downside though inflationary pressures could turn out to be stronger. Robust global growth and growing capacity utilization mean that the price-dampening impact of globalization on import prices has become less significant. Apart from supply-side induced high oil prices, downside risks to growth include a disorderly correction of the U.S. current account deficit and an inflation-induced rise in interest rates, with potential negative consequences on real estate prices that have rocketed in many countries.

Declining Long-Term Interest Rates, Stabilization of Stock Markets

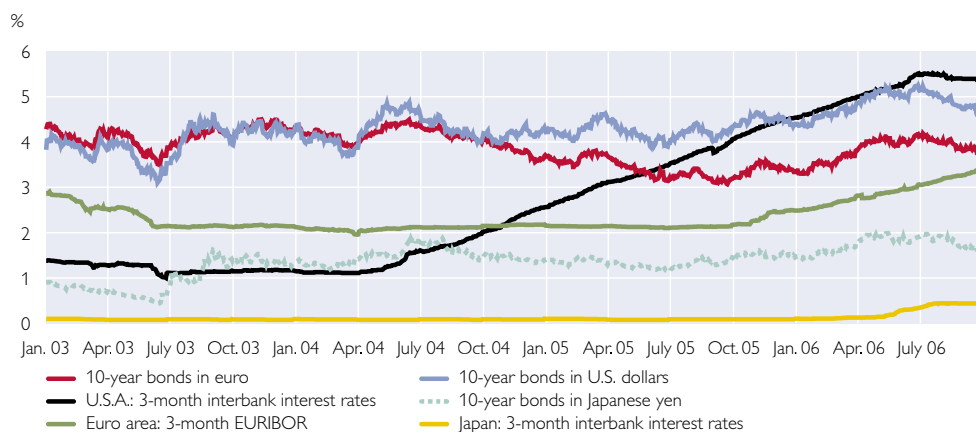
At end-June 2006, the U.S. Federal Reserve raised key *money market* rates by a further 25 basis points to 5¼%. Since then, U.S. key interest rates have remained stable, after having been increased by 150 basis points in total over the past 12 months. In the euro area, key interest rates were raised by 25 basis points each in June,

August and October 2006 (and by a total of 125 basis points in the last 12 months) to 3.25% while the Bank of Japan (BoJ) increased key interest rates in July 2006 by 25 basis points to 0.25%. The central banks in a number of other industrialized countries also increased their key interest rates. The Open Market Committee of the Federal Reserve System announced in September 2006 that further monetary policy tightening could be necessary in view of still existing inflation risks. The Governing Council of the European Central Bank (ECB) noted in October 2006 that key interest rates had continued low and that it would be warranted to further withdraw monetary accommodation if the assumptions about future economic growth will be confirmed. The U.S. money market's yield curve signaled in early October that the money markets considered a lowering in key interest rates next year to be a possibility. In the euro area, the money market yield curve indicates that there are expectations of a further hike in key rates before the end of 2006. In Japan, forward rates suggest that key interest rates will continue to climb slowly.

Long-term interest rates in the U.S., euro area and Japanese *govern-*

Chart 1

**Interest Rate Developments in the U.S.A., the Euro Area and Japan
from January 1, 2003, to October 4, 2006**



Source: Thomson Financial.

ment bond markets underwent a trend reversal to the downside in July 2006. This may be attributable to increased market expectations of a slowdown in the world economy starting in the U.S.A. In both the U.S.A. and the euro area, inflation risk premia derived from inflation-indexed bonds with a residual maturity of ten years have since declined slightly, which is due to the notably falling oil prices. Long-term real interest rates measured by the yields on these bonds were also a tad lower.

Risk premia on corporate bonds in the U.S.A. and the euro area exhibited an uptrend in the past four quarters, which strengthened for a short while in May 2006 owing to the markets' increased risk aversion. In early October 2006, spreads for issuers with a lower credit rating (BBB) were 120 basis points in the U.S.A. and 130 basis points in the euro area. Since the prospects for the probability of loan defaults have not changed in essence, this indicates that investors are somewhat less willing to assume credit risks.

As for stock markets in the U.S.A., the euro area and in Japan, stock in-

dices have rallied since the steep losses of May/June 2006 triggered by increased investor risk aversion. In the euro area and the U.S.A., stock price levels have now returned to their levels of May 2006, leading to prices firming by some 11% and 7% since the beginning of 2006, respectively. Healthy corporate profitability and declining long-term interest rates have fueled the recovery. In addition, implied stock price volatility decreased following increases in May/June, although the decrease in the U.S.A. was less marked. This suggests reduced investor uncertainty. Price/earnings ratios in recent quarters increased slightly in the euro area and decreased somewhat in the U.S.A. They are currently hovering around their historical averages since 1990. In Japan, price/earnings ratios, despite very strong price gains in the past few quarters, are below their historical, albeit relatively high, average since 1990.

In the foreign exchange markets, the euro remained relatively steady against the U.S. dollar in the past few months (around USD 1.27 per euro). Despite the end of the BoJ's policy of

quantitative easing and the country's dynamic economic recovery, the Japanese yen depreciated in value, latterly stabilizing at the historically low level of around JPY 150 per euro. The Swiss franc depreciated in the past few months, softening to almost CHF 1.59 per euro. This is likely to be in connection with the interest rate advantage enjoyed by euro area investments, which has been growing in the last few months.

Emerging Markets: Dynamic Growth – Private Capital Inflows

Continued Robust Growth

The IMF expects that *emerging market economies* (EMEs) will experience sustained economic momentum in 2006 and has accordingly revised its growth forecast for these countries sharply upward. Real GDP growth of EMEs is expected to be 7.3% in 2006 and 7.2% in 2007. Inflation is anticipated to fall slightly to 5.0% by 2007. Turmoil in the world financial markets in May/June 2006 did not adversely affect the outlook significantly primarily because the increases in emerging market spreads remained a temporary phenomenon only and these spreads are still historically low. However, EMEs remain susceptible to changes in international investors' willingness to take risks and sensitive to a rise in interest rate levels in industrialized countries. For oil importing countries, adjustments to terms-of-trade losses, a good portion of which may be long lasting, represent an economic challenge that has so far been met remarkably well.

Non-Japan Asia (NJA) in the first half of 2006 sustained the economic momentum commencing in mid-2005 on the back of exports and robust domestic demand. The IMF ex-

pects NJA to experience an uninterrupted economic upturn in 2006 and 2007, for which further developments in the U.S. economy will represent the main risk, in addition to high energy prices. In China, real GDP growth in the first half of 2006 accelerated to 10.9% year on year. Beginning in April 2006, the People's Bank of China raised its key interest rates to curb the high levels of lending growth.

In *Latin America*, rapid economic momentum accelerated in the first half of 2006, and the IMF anticipates exports and domestic demand to fuel real GDP growth of almost 5% for the year as a whole. The fact that both stock price and exchange rate losses owing to turmoil in global financial markets in May/June 2006 were relatively quickly offset reflects Latin America's decreased vulnerability thanks to its current account surpluses, higher currency reserves, more flexible currency regimes and stronger fiscal positions.

According to the IMF, the fact that also oil-importing countries in *Sub-Saharan Africa* are posting robust growth is primarily explicable by improved economic policies, stronger institutions and a better investment climate. The continuation of these developments should be supported by the market liberalization of both industrialized and emerging economies, debt cancellations and increases in development cooperation funds, which is particularly important if the Doha round fails.

In the *Middle East*, oil revenue has been increasingly used to build infrastructure and to consolidate the non-oil sector. In this region, loan growth, as well as asset prices (stocks, real estate) and their volatility, have soared in the past three years, resulting in

the financial sector becoming more vulnerable due to a possible deterioration in credit quality or to asset price corrections.

In *Turkey*, the coincidence of higher than expected inflation from April 2006 with increased worldwide risk aversion triggered a sharp depreciation in the national currency and a substantial retreat in stock prices. Surmounting these difficulties lasted longer than in other emerging markets – a sign of Turkey's greater vulnerability in the eyes of investors. The Turkish central bank reacted to the turmoil in the financial markets and to the rise in inflation by increasing key interest rates by 425 basis points in total. Although the central bank will fail to meet its inflation target set in early 2006, it stood by its explicit mid-term inflation target of 4%. The current account deficit, which deepened significantly in 2005, is not set to shrink in 2006 despite the Turkish lira's sharp depreciation, as revenue from tourism is expected to take a knock owing to political uncertainties. The financing of this deficit has recently been facilitated by the rapid growth of FDI inflows driven, first and foremost, by Turkey's EU accession process.

High Private Net Capital Inflows with Growing Current Account Surpluses

Private net capital inflows to EMEs accelerated in 2005, reaching a historical high. The first half of 2006 saw further net inflows despite the turmoil in global financial markets. The IMF expects sustained high, albeit moderately lower private net inflows for the full years 2006 and 2007. These will arise exclusively from net direct investment whereas, for port-

folio investment and other flows (especially credits), net outflows are anticipated. In all individual regions, direct investment constitutes the key net inflow measure. For Africa, Latin America as well as for Central and Eastern Europe (CEE), net inflows are also expected for portfolio investment. For CEE, net inflows are also anticipated for other flows.

From a regional perspective, EMEs in Europe received the lion's share of private net inflows in 2005. This region was also the only one with a current account deficit in aggregate terms in recent years. In the Middle East, higher crude oil prices generated considerably higher current account surpluses coupled with an *increase in official currency reserves* while the investment of oil export revenue gave rise to private net capital outflows. In the other regions, the combination of current account surpluses and private net capital inflows is reflected in the continued build-up of currency reserves. Since 1998, the ratio of currency reserves to imports has increased from 45% to 69%, having a positive impact on EMEs' resilience to shocks. Some observers see this huge increase in EMEs' currency reserves as one of the reasons for industrialized countries' historically low level of long-term interest rates.

In addition to changes to official currency reserves, *public sector net capital outflows* were observed in all regions in 2005 due to repayments of foreign debt and investment by oil exporting countries, in particular. The IMF also expects the same for 2006 and 2007. Overall, public sector net outflows will in fact exceed private net inflows in 2006 and be roughly as high as the latter in 2007.

Table 2

**Net Capital Flows to Emerging Market Economies and
Developing Countries according to the IMF¹**

USD billion

	2002	2003	2004	2005	2006 ²	2007 ²
Private net capital inflows	77.3	165.6	205.9	238.5	211.4	182.2
By instrument						
Direct investment	150.6	159.1	176.9	255.9	263.3	246.1
Portfolio investment	-91.7	-10.9	13.9	3.2	-31.1	-4.6
Other flows	18.4	17.3	15.1	-20.6	-20.8	-59.2
By region (country)						
Latin America and Caribbean	3.8	17.3	1.1	14.0	12.7	18.5
Europe	53.2	51.4	70.4	113.5	88.8	84.8
CIS	15.7	17.7	7.5	37.6	18.8	5.4
Middle East	-20.0	4.4	-19.6	-20.0	-31.8	-17.3
Africa	4.1	6.8	16.1	29.4	24.9	21.7
Asia	20.6	68.1	130.4	64.0	97.9	69.0
Memorandum						
Public sector net capital inflows ³	-4.3	-53.1	-64.7	-151.8	-238.7	-174.1
Current account balance	133.3	229.6	303.8	514.7	666.8	720.4
Reserve assets ⁴	-200.6	-362.7	-513.5	-592.5	-666.3	-747.9

Source: IMF (World Economic Outlook).

¹ The table shows aggregated balance of payments data sets of 131 nonindustrialized countries, including the major 44 EMEs. Europe = Central and Eastern Europe, excluding European CIS countries and including Turkey.

² Forecast.

³ A minus sign indicates a net outflow of capital from developing countries to industrialized countries.

⁴ A minus sign indicates an increase.

**Claims of Austrian Banking
Sector Lead in CEE**

In the international arena, Austrian banks have great importance as lenders and financial intermediaries in CEE. At end-March 2006, claims came to around 7% of recipient countries' GDP (see table 3).

**Continued Below-Average Growth
of Return of Emerging Europe's
Foreign Currency Bonds**

Setbacks and recovery phases marked international eurobond market trends between end-March 2006 and end-September 2006. After the average *yield differential* of EME issuers' government bonds denominated in euro and U.S. dollars against benchmark bonds (based on J.P. Morgan's (Euro) EMBI Global index) had reached a low of about 50 (euro) and 180 (U.S. dollar) basis points in early March (euro) and early May (U.S. dollar), this spread widened in the wake of the turmoil in the financial markets

from May to end-June 2006 to some 105 and 230 basis points, respectively. July and the first half of August 2006 saw an almost complete correction before yield differentials began to widen again, standing at some 80 (Euro) and 210 (U.S. dollar) basis points at end-September.

Although yield differentials in the entire period under review showed a slight increase, from end-March to end-September 2006 eurobonds denominated in U.S. dollars and euro generated a (non-annualized) *overall yield* of more than 4% and around 2%, respectively. In regional terms, European issuers' eurobonds posted a below-average performance in both market segments. This was attributable primarily to the rather modest performance posted by eurobonds with relatively low ratings (on the EMBI Global index, especially Serbia and Turkey; on the Euro EMBI Global index, Turkey, Bulgaria, Croatia and Romania).

Table 3

Claims of BIS Reporting Banks on Central and Eastern Europe and Turkey¹

	% of GDP of the receiving country											
	AT	DE	IT	FR	NL	SE	BE	UK	Europe ²	US	JP	
Central and Eastern Europe plus Turkey	7.2	6.6	3.5	3.1	2.3	2.4	3.2	1.4	34.3	1.9	0.6	
Central European EU Member States												
Poland	3.1	6.9	6.2	1.6	4.5	0.8	2.8	0.5	33.9	2.6	1.1	
Slovakia	36.3	5.3	19.2	4.5	7.4	0.1	12.3	0.9	87.2	2.3	0.1	
Slovenia	22.2	11.3	2.2	5.4	0.7	0.0	4.4	0.2	47.3	0.4	0.5	
Czech Republic	22.9	5.3	1.5	14.7	2.3	0.1	20.8	1.6	70.0	2.6	1.6	
Hungary	17.7	19.3	7.5	3.2	2.5	0.1	9.3	1.7	78.4	2.9	0.5	
Rest of Central and Eastern Europe												
Bulgaria	8.0	3.8	6.0	3.1	1.1	0.0	0.3	0.2	40.0	0.7	0.2	
Croatia	53.5	9.1	48.9	1.6	0.4	0.0	0.6	0.6	116.1	0.6	1.1	
Romania	6.7	2.1	2.3	5.3	4.6	0.1	0.1	0.2	29.2	1.2	0.1	
Russia	0.9	4.7	0.2	0.9	1.0	0.2	0.1	0.7	10.2	1.1	0.5	
Turkey	0.2	3.8	..	2.7	1.4	0.1	2.2	2.9	15.9	2.6	0.6	

Source: BIS, Eurostat, Thomson Financial, national sources and OeNB calculations.

Note: The claims shown here correspond to the "Consolidated Foreign Claims of BIS Reporting Banks" published by the BIS (BIS Quarterly Review September 2006, Table 9B). For every bank, these include the claims and off-balance sheet guarantees as well as the acceptances of liabilities by both parent and subsidiary companies on the borrowers and/or parties to whom the guarantees are made outside the group in the relevant countries although, in the case of subsidiaries in host countries, only claims existing in a currency other than that of the host country are included.

¹ As of end-March 2006.

² In addition to the countries of origin listed herein, Europe also comprises Denmark, Greece, Ireland, Portugal, Finland, Spain, Switzerland and Norway.

The sharp correction in spreads in May and June 2006 from previously attained record lows was induced less by country-specific factors than by a general reduction in investors' risk appetite and by the rise in both short- and long-term interest rates in the major industrialized countries until early July 2006. During the first eight months of 2006, the number of rating upgrades exceeded the number of rating downgrades by a wide margin, resulting in a further improvement of both indices' average ratings as well. The increase in investors' risk aversion is due to the volatility of energy prices (primarily oil) and geopolitical uncertainties (war in Lebanon, tension with Iran). Likewise, capital market rates, which have fallen since early July, and the stabilization of U.S. short-term interest rates are likely to have played a major part in the recovery of eurobonds since early

July. It should also be underlined that the selling surge in various asset classes in May and June 2006 concerned first and foremost, stocks, foreign currencies and local currency bonds rather than eurobonds. There are two reasons for eurobonds' resilience. First, fundamental data improved. Second, market-related factors, such as growing institutional demand (for eurobonds as an addition to the traditional portfolios mix for risk diversification purposes) at the same time as easing supply (pre-financing in 2005, bond buybacks, mounting preference for issuing local currency bonds) may have also played a part. Whereas market average yield spreads are likely to be in line with fundamental data (based on the average rating) at the level of broad indices, the dispersion of yield spreads across countries included in the relevant indices was still far smaller than

Table 4

Eurobonds: Spreads to Reference Bonds and Returns by Region

	EMBI Global (in USD)						Euro EMBI Global (in EUR)					
	Share of total index in %	Yield differential in basis points		Total return in %	Rating	Duration	Share of total index in %	Yield differential in basis points		Total return in %	Rating	Duration
		Sep. 29, 2006	Sep. 29, 2006					Change since March 31, 2006	Since March 31, 2006			
Overall index	100.0	208	17	4.3	BB+	7.01	100.0	76	7	2.1	BBB	5.58
Africa	3.4	288	38	3.2	BBB	3.45	4.7	92	27	1.5	BBB+	5.20
Asia	15.4	182	1	5.2	BB+	6.53	4.8	102	5	2.2	BBB	4.58
Europe	23.4	165	33	2.8	BBB-	6.76	67.6	59	10	1.8	BBB+	5.85
Latin America	54.7	218	10	4.8	BB+	7.57	22.9	126	-1	3.0	BBB-	5.07
Middle East	3.0	420	82	0.0	B-	5.38	x	x	x	x	x	x

Source: Bloomberg, JP Morgan, OeNB calculations.

Note: The EMBI Global and Euro EMBI Global indices differ in composition (in terms of currencies, countries covered, instruments, maturities, etc.).

Differences in the level and growth of yield differentials and returns as well as differences in other index features can be attributed in part to this different composition. The rating is calculated as the average of Moody's, Standard & Poor's and Fitch's ratings for long-term government foreign currency liabilities and are given in the rating categories of Standard & Poor's.

the dispersion of their ratings, which might be considered to mark a relatively small differentiation by investors. Similarly, the difference between the yield spreads on eurobonds of sovereign debtors and corporate bonds of the same rating grade (not adjusted for maturity structure) fell short of their historical level. This difference was less positive or more negative depending on the rating grade. Apart from these rather *technical risk factors*, higher inflation rates and a sharper increase in major industrialized countries' key interest rates than currently expected, a significant cooling of the world economy (especially in the U.S.A.), a disorderly correction of global imbalances and an increase in geopolitical risks are all likely to be key risk factors for the eurobond market. Above all, countries with high external financing requirements, deep budget deficits and inadequate economic policy sustainability are likely to be particularly affected by another increase in investors' risk aversion and by the ensuing capital outflows.

Central and Eastern Europe: Currencies Stronger, Except for Hungarian Forint

Most CEE currencies under review had an *exchange rate* at end-September 2006 that was either unchanged or firmer against the euro than at end-March 2006 even if some had fluctuated sharply in the interim. The Hungarian forint was the main exception: By end-September, it had softened by some 2.7% against the euro, compared with end-March. In the period under review, the Russian ruble depreciated by some 1.2% against the euro. However, this was attributable to the performance of the USD/EUR exchange rate. The ruble appreciated by some 1.5% against its basket of currencies consisting of euro and U.S. dollars at a ratio of 45% and 55%, respectively. The Slovak koruna, which also depreciated during the summer, more than made up for lost ground. In addition, the Polish zloty, which had come under pressure, has since end-June firmed around end-March levels, albeit with setbacks. The Czech koruna, the Ro-

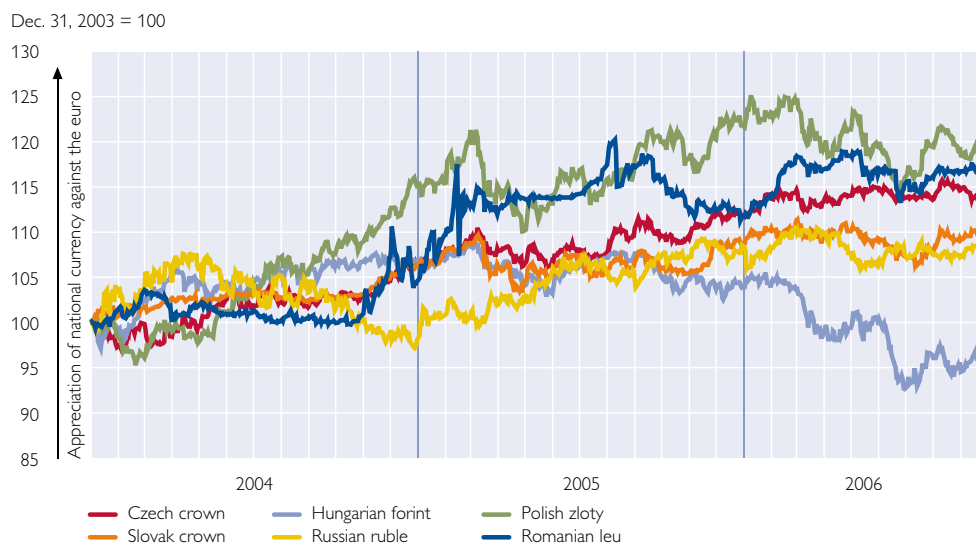
manian leu and the Croatian kuna were subject to by far smaller fluctuations. At end-September 2006, the Czech koruna was firmer by some 0.9%, and the latter two currencies were around 0.5% softer against the euro than at end-March. On a year-on-year basis, only the Hungarian forint posted a substantial depreciation whereas, of the currencies under review, the Czech koruna registered the biggest nominal appreciation (+5%) against the euro. The Slovenian tolar's exchange rate remained almost unchanged at the ERM II central rate, which was fixed as an irrevocable conversion rate for entry to the euro area at the beginning of 2007.

The performance of CEE exchange rates was partly overshadowed by negative *external factors*. These factors are roughly classifiable into two groups. The first group comprises factors the impact of which has accumulated over a fairly long period – such as rises in short-term interest

rates, capital market rates and interest expectations in major industrialized countries – thus gradually dampening the incentive for seeking higher yield prospects in riskier market segments (stocks, corporate bonds, EME assets). From early July 2006, however, the stabilization of U.S. short-term interest rates, the moderation of expectations of interest rates hikes and the sharp decline in long-term yields in the U.S.A. and the euro area had a favorable impact on the global sentiment of financial investors and thus also on the performance of CEE currencies. The second group of external risk factors includes “shocks” in certain market segments (such as the U.S. stock market's nosedive in mid-May and early June 2006) and certain countries (e.g. Iceland and New Zealand in March 2006 due to compelling current account problems or in Turkey in May 2006 owing to both current account and inflation problems). These shocks emerged without much warning (albeit not completely

Chart 2

Exchange Rates of National Currencies against the Euro



Source: Thomson Financial.

Note: Index based on euro per unit of national currency.

unrelated to the aforementioned group of external factors) and spread relatively rapidly in an environment characterized by the aforementioned factors. As a result, considerable amounts of capital flowed out of both the stock markets and local currency bond markets of some CEECs exhibiting a high current account deficit and thus a similar risk profile (e.g. Hungary), a deep fiscal deficit (e.g. Hungary) or domestic political uncertainties (e.g. Slovakia, Hungary). These *country-specific factors* played a greater role in CEECs particularly in June and July 2006.

In Hungary, the government was forced to admit in mid-June 2006 that the budget deficit had got out of hand: it threatened to reach some 12% of GDP in 2006. Market players took skeptical note of correction measures announced at the same time and totaling some 1.5% of GDP; it is likely that this sentiment was very much influenced by the fact that the government's fiscal policy had lacked credibility for some time. In addition, the major rating agencies delivered a more unfavorable assessment of the country's risk outlook. However, the Hungarian forint has largely remained unaffected by the country's domestic political turmoil since mid-September 2006. In Slovakia, markets responded negatively to the formation of a coalition government including national populist parties that had announced a partial retreat from market reforms, which exacerbated the impact of external factors on the currency. In Poland, by contrast, the dismissal of the reform-friendly finance minister at end-June 2006, the resignation of the moderate prime minister in early July and the collapse of the three-party coalition at end-September each provoked a negative re-

sponse from the markets for a short while only. In the Czech Republic, the stalemate situation following the parliamentary elections, which has thwarted the formation of a majority government even after four months of talks, did not have any significant negative impact on the national currency either.

The CEE currencies continued to perform in a macroeconomic environment marked by robust growth. In the first half of 2006, GDP growth in most of the countries under review attained rates of between 5.0% and 7.5%. Hungary, which posted growth of 4.2%, was the sole exception. Of the countries under review, Hungary was the only one where net exports continued to make a higher contribution to GDP growth than domestic demand as a whole. Unlike the scenario in Bulgaria, Croatia and Romania, however, the contribution of net exports to growth also remained positive in the other four Central European countries. With the exception of Hungary, investment accelerated at a faster pace than consumption, which continued to increase at a slower rate than GDP as a whole in all the countries (except for Romania), thereby tending to reduce inflationary pressures.

In the first half of 2006, the deficit on the combined current and capital accounts relative to GDP further increased on a year on year basis from an already high level (to between 7% and 20% of GDP) in Hungary, Slovakia, Bulgaria, Croatia and Romania. The Czech Republic also registered a widening of its deficit, albeit at a much lower level (3% of GDP). In Hungary and the Czech Republic, the deficit was induced by the negative balance of the income and current transfers accounts whereas the goods

and services balance was positive. By contrast, the deficit in Slovakia and, especially, in Bulgaria, Croatia and Romania was induced by significant (and on a year-on-year basis, increased) reductions in the goods and services balance. In all four countries, however, this may have been partly connected with imports attributable to brisk investment demand, although, in Romania, consumer goods imports are also likely to have played a fairly significant role. Equally, the fact that the net inflow of direct investment (including intra-company loans) increased and limited the widening of the remaining external financing gap should also be seen in a positive light. The remaining external financing needs were large in scale in Croatia only (almost 14% of GDP). In Hungary, Bulgaria and Romania, the external deficit after the deduction of (on a year-on-year basis, increased) direct investment inflows amounted to 2% to 4% of GDP. Although capital inflows plugged this financing gap (thereby also permitting the build-up of currency reserves), the shortfall also led to a further increase in foreign debt. Financing requirements in the first half of 2006 are also attributable to seasonal factors particularly in Croatia and Bulgaria.

In conjunction with existing liquid investment opportunities, the increase of *short-term interest rate differentials relative to the euro area* in response to central bank rate hikes propped up the national currencies of Hungary and Slovakia. In Poland, however, the interest rate differential narrowed as a result of stable Polish interest rates relative to rising euro area rates while the negative interest rate gap between short-term rates remained largely stable in the Czech Republic.

Whereas the central bank rate hikes were primarily traceable to inflation developments, several central banks deemed it appropriate *to intervene in the foreign currency market* in response to exchange rate fluctuations. The Slovak central bank intervened with relatively small sums in favor of the Slovak koruna in April and May 2006, but also sold foreign currency totaling EUR 3.1 billion in June and July 2006 to counter the depreciation of the Slovak koruna. By contrast, the Croatian central bank repeatedly purchased foreign currency from banks between May and July 2006 in a bid to check upward exchange rate pressure on the Croatian kuna. Following a relatively rapid depreciation of the kuna between early August and mid-September 2006 in response to the tightening up of provisions relating to commercial banks' short-term foreign currency liquidity requirements (which coincided with the end of the tourism season), the Croatian central bank both purchased and sold foreign currency in the second half of September to stabilize the exchange rate. In Slovenia, banks almost completely ran down their foreign currency swap portfolio with the Slovene central bank in June and July 2006. This is likely to be connected with Slovenia's forthcoming entry to the euro area on January 1, 2007. Pursuant to the decision of the European Council of June 11, 2006, the conversion rate will be SIT 239.64 per euro, which is equivalent to the Slovene tolar's central rate in ERM II.

Apart from the negative consequences of high exchange rate volatility for the real economy and financial investors, exchange rate stability is also important from the perspective of financial stability in countries with

a large share of foreign currency loans¹ as a percentage of total domestic credit to enterprises and households. The high current account deficit, which is partly a result of high domestic loan growth and/or relatively deep fiscal deficits, still looks to be the biggest risk factor for exchange rate stability in many CEECs, provided the deficit does not arise directly from imports attributable to direct investment.

An economic climate that promotes the inflow of direct investment (both for new investment and the re-investment of profit shares earned by foreign investors) can help ensure exchange rate stability. An external financing need that is not met by direct investment augments dependency on portfolio capital and credit liabilities as sources of finance. This, in turn, exposes the countries concerned to a greater extent to international financial market fluctuations and therefore necessitates that a significant degree of economic credibility is ensured. In the first half of 2006, the possibility of increased exchange rate volatility in the event of disruptions in these areas became evident in the case of several countries (Iceland, New Zealand, Hungary and Turkey). In this connection, it should not go unmentioned that there are increased political (and economic) risks in some CEECs, which could have a negative impact on market confidence in the medium term. A slowing in domestic loan growth financed by foreign capital inflows (and the net repayment of foreign currency liabilities as a result of restructuring both the credit and refinancing structure of banks) could temporarily trigger increased ex-

change rate volatility even if this is likely to reduce the external financing need in future.

Yield Spreads of Local Currency Government Bonds Affected by International Developments

After a period of moderate stability from end-March 2006 to mid-May 2006 (coupled with a slight narrowing in Hungary), yield differentials of 10-year local currency government bonds against euro area benchmark bonds increased by a wide margin in Poland, Slovakia and Hungary. Although the yield spread in the Czech Republic widened marginally, it remained very close to euro area levels. The main reason for this development in all four bond markets was the deterioration of the international climate for emerging markets, which was exacerbated by country-specific factors. The increase in yield differentials was most evident in Slovakia and Hungary (by some 110 basis points), followed by Poland (+ 80 basis points) and, to a much lesser extent, by the Czech Republic (+25 basis points). Conversely, easing in the U.S. and euro area bond markets from the second half of June 2006 (from mid-July in Slovakia) induced yield spreads to narrow. While this process persisted in Slovakia until the end of the period under review, a renewed increase in spreads has been evident in Hungary and Poland since the second half of July. It has led to levels above the high recorded at end-June 2006.

In the period from March 2006 to September 2006, inflation as measured by the Harmonized Index of Consumer Prices (HICP) rose in

¹ For more on this subject, also see also the box "Foreign Currency Lending Risks of Austrian Banks are Basically Domestic Risks" in the section "Austria's Financial Intermediaries Are on A Dynamic Growth Path."

Poland, Slovakia and Hungary while continuing to remain largely stable in the Czech Republic. As a result, the positive inflation gap in Hungary and Slovakia widened while inflation in Poland and the Czech Republic approached the euro area rate from below and remained close to euro area levels, respectively. In terms of core inflation (overall inflation excluding energy and unprocessed food prices), inflationary pressures rose above all in Hungary and Slovakia. Inflation risks are currently pointing up in all four countries. In Hungary, inflation is expected to accelerate noticeably to around 8% in the first half of 2007 as a result of government fiscal consolidation measures (increase in regulated prices and indirect taxes). In Slovakia, the government is thinking of introducing a lower rate of value-added tax on specific goods and services, which could have a directly favorable impact on inflation. However, the long-term impact could prove detrimental owing to demand effects and in view of sustained robust consumer demand and rising unit labor costs. In the Czech Republic, the increase in indirect taxes and regulated prices is likely to trigger a rise in inflation in 2007 whereas, in Poland, the agricultural drought could fan inflation in early 2007 to above the target band average (2.5%). In addition, robust growth in Poland, Slovakia and the Czech Republic is narrowing negative output gaps and widening positive output gaps, which might stoke inflation in the medium term. In these three countries, a fiscal policy which under the given economic conditions seems too unambitious represents another risk factor for future inflationary trends.

In the past few months, the central bank of the Czech Republic and, especially, those of Slovakia and Hungary have already responded to burgeoning inflationary pressures, raising their respective key interest rates by 50, 125 and 175 basis points between March 2006 and September 2006. In all three countries, both the inflation momentum and the inflation outlook prompted the market to anticipate further interest hikes, which is also mirrored in Hungarian and Czech forward interest rates. In Poland the forward rates also reflect the expectation of a steeper increase in short-term interest rates within the next six months.

Budgetary trends in the past few months played a signal role in the Hungarian bond market, in particular. The fact that the Hungarian government once again failed to meet its deficit target in 2006 (by an amount that surpassed all previous expectations) was received by the market with great disappointment. The erosion of Hungary's fiscal policy credibility over the past few years may also be the reason why yield differentials have remained at high levels, despite the announcement of government plans for the long-term restructuring of public finances in the period from 2007 to 2009. In Poland and Slovakia, a change in the leadership of both countries cast doubts about the course fiscal policy will take in the coming years. So far, however, the leaders of both countries have affirmed that they are seeking to maintain a stability-oriented fiscal policy. The updated convergence programs in early 2007 will contain further details on medium-term fiscal plans. In the Czech Republic, the unstable political situation (possible fresh elections in early

2007) makes longer-term fiscal policy objectives continue to look equally uncertain.

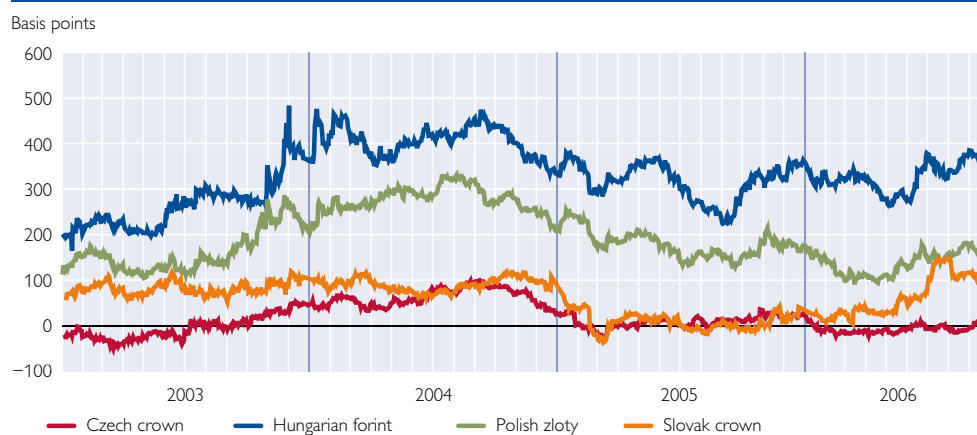
In view of the increased fiscal policy uncertainties and inflation risks, it is not surprising that market players expect that Hungary's and Slovakia's *date of joining the euro area* will be further deferred: The dates given in quarterly surveys changed by one year in each case between February 2006 and August (to 2013 in the case of Hungary and 2010 in Slovakia). For Hungary, moreover, the earliest expected date of entry was postponed by two years to 2012.

Rising inflation rates, central bank interest rate hikes (except for Poland) and fiscal policy risks represent *uncertainty factors for the capital market outlook* in all four countries. In Hungary, it remains to be seen whether measures already adopted or in the pipeline can really put public

finances on a sustainable footing in the longer term. In the three other countries, the respective governments will have to provide proof that their fiscal policy credibility of the past few years will be maintained. Furthermore, the matter about whether the mild inflationary climate in the Czech Republic and in Poland can be sustained in the medium term despite the aforementioned risks or whether currently high inflation in Hungary and Slovakia can be reduced again to a lower level is of crucial importance. In Hungary and Poland, the two countries with a particularly large share of foreign investors holding the outstanding volume of government bonds, local currency bond markets ultimately remain dependent on the international investment climate and potential future shifts in the portfolios of international investors.

Chart 3

Yield Spreads of 10-Year Government Bonds against Euro Benchmark Bonds



Source: Eurostat.

Financing Conditions for the Real Sector Deteriorate Marginally

Corporate Finance Perspectives Cloud over Slightly

Investment Activity Quickens

Austrian business activity picked up appreciably in 2006, supported by increasingly animated investment and solid export growth. Investment in plant and equipment was stimulated, above all, by external impulses and reinforced by a rise in capacity utilization.

In parallel to real investment, financial investment gathered momentum in the first six months of 2006, climbing by more than 40% to EUR 12.4 billion. Almost half of all new investment was in securities (bonds and quoted stock), which grew three times as much as in the first half of 2005. As in the previous years, deposits continued to mount, increasing at about the same fast rate as in the first half of 2005, whereas Austrian enterprises' direct investment in companies abroad in the first half of

2006 was lower than the comparable 2005 value according to balance of payments statistics.

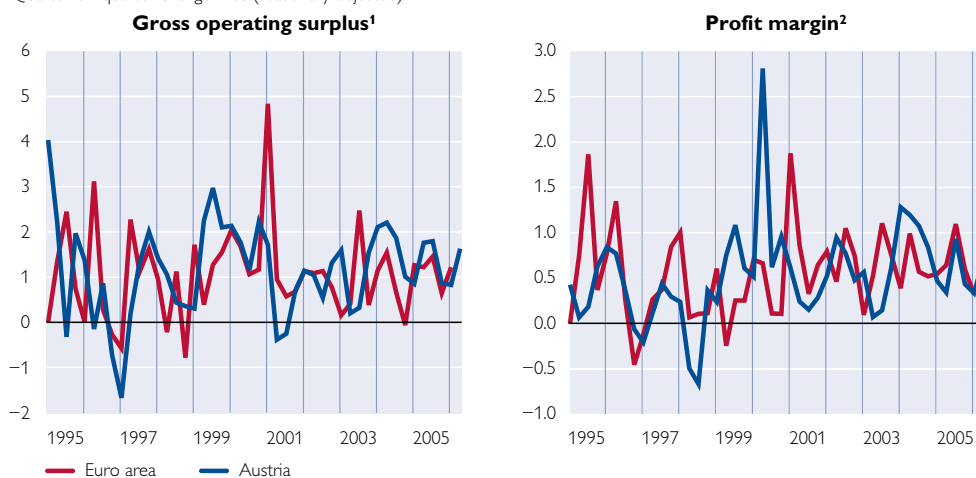
The development of insolvencies mirrored the brighter economic prospects: They sank by 6.4% in the first three quarters of 2006 against the same period of 2005. Both newly opened insolvency proceedings and the number of no asset cases declined. While default liabilities advanced by 3.1% in nominal terms, their share in overall corporate financial liabilities (according to the financial accounts) continued to decrease in line with the downtrend of the past few years; this share stood at 0.7% in the third quarter of 2006.

Overall, the corporate risk perspective deteriorated marginally in the first half of 2006. The rise in interest rates has increased the interest payment burden on companies. Moreover, financing conditions at the Vienna stock exchange (Wiener Börse

Chart 4

Indicators of Profitability Performance in the Corporate Sector

Quarter-on-quarter change in % (seasonally adjusted)



Source: Eurostat.

¹ Including mixed income of the self-employed.

² GDP deflator less unit labor costs.

AG) worsened when stock prices plummeted in May 2006, thus ending a three-year bullish trend. The end of price increases on the stock exchange also contributed to the (at least) temporary halt to the rise in the capital ratio¹ in the second quarter of 2006, which occurred despite ongoing high equity funding (above all through the stock market). Also, companies' debt ratio augmented slightly in the second quarter of 2006, after having diminished in recent years both as a share of the gross operating surplus and as a share of GDP. By contrast, companies' risk-bearing capacity was bolstered by the pronounced reduction in foreign currency risk in the past few years and by the continued rise in corporate profits.

Internal Financing Potential Remains High on the Back of Sustained Growth in Profits

Corporate profits made great headway in the past few years and remained high, as in the whole euro area. The development of the profit margin² and of the gross operating surplus³ signal further gains in profits in the first half of 2006. Unit labor costs developed moderately, and still historically low nominal interest rates helped keep financing costs down.

Financing Conditions Deteriorate Marginally

While financing conditions for Austrian companies remained good in the first three quarters of 2006, they were not quite as favorable as in 2005, both for borrowing funds and for issuing equity capital.

As a consequence of the market setback in the second quarter of 2006, stock prices on the Vienna bourse could not keep up with the pace of profits, resulting in a slight worsening of conditions for procuring corporate finance on the stock exchange. This marginal deterioration is reflected both in the decline of the price-to-earnings ratio and in the widening of the difference between the earnings yield⁴ and the government bond yield, whose development may be seen as an indicator of the stock market risk premium.

The conditions for borrowing by way of loans also deteriorated in the first three quarters of 2006. The development of the nominal and real interest rates for corporate loans reflects the rise in monetary policy rates since December 2005 (see chart 5). Nevertheless, the interest rate level in Austria remained very low both historically and when compared with that in the euro area.

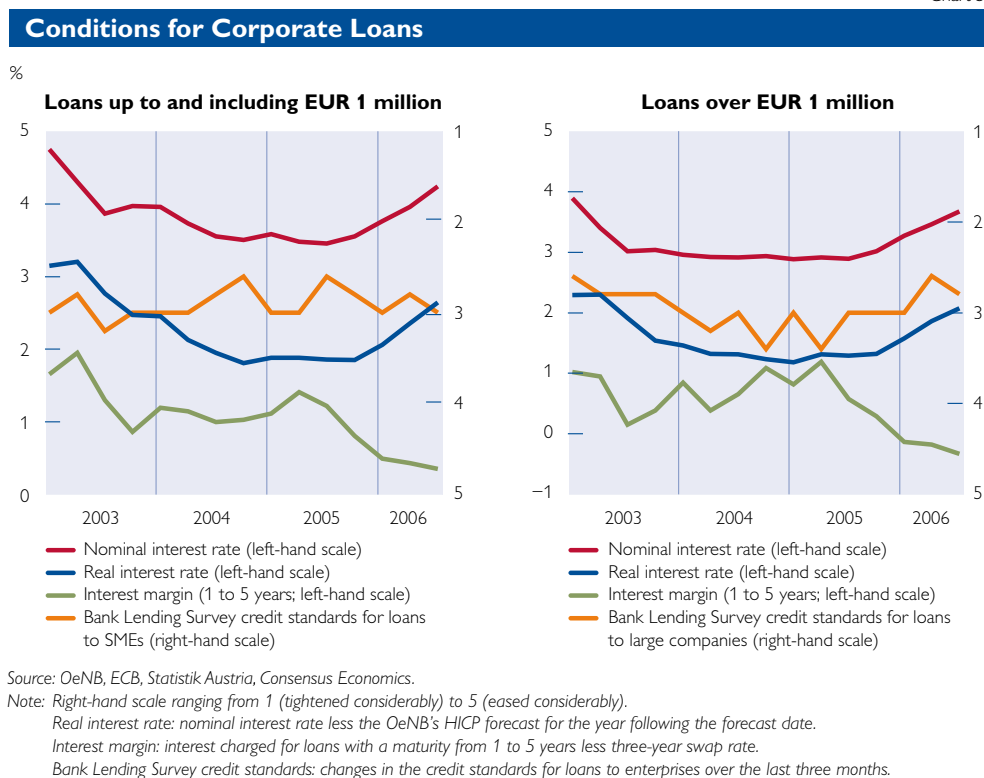
¹ Strictly speaking, the ratio of shares and other equity to total liabilities. The financial accounts statistics do not cover the claims of equity investors on nonfinancial assets and thus underestimate the absolute level of equity.

² The profit margin is the ratio of the deflator of gross value added to unit labor costs.

³ The gross operating surplus is the surplus created by business activity, after the compensation of the production factor labor. It is calculated from GDP less compensation of employees and less taxes on production (excluding subsidies) and is thus the SNA (System of National Accounts) equivalent of gross operating income. The gross operating surplus constitutes a proxy for measuring absolute profits.

⁴ The earnings yield is the inverse of the price-to-earnings ratio.

Chart 5



A comparison of banks' retail interest rates and interest rates for largely risk-free financial assets provides an indicator of the average risk premium contained in banks' interest rates.⁵ The difference between interest rates for corporate loans and swap rates of comparable maturities shows that the risk premium for loans up to EUR 1 million decreased further in the first three quarters of 2006; the premium for larger-volume loans remained very low. Most likely, these low premiums are a consequence of the ongoing improvement of economic conditions.

This finding largely coincides with the Austrian results of the Eurosystem bank lending survey, according to which lending conditions were

tightened overall in the first three quarters of 2006. This development hit large companies more than small and medium-sized enterprises (SMEs). At the same time, banks increasingly took risk aspects into account in their conditions for corporate credits: While they reduced the interest margins for lending to borrowers with average credit ratings in the first three quarters of 2006, they raised them for riskier loans.

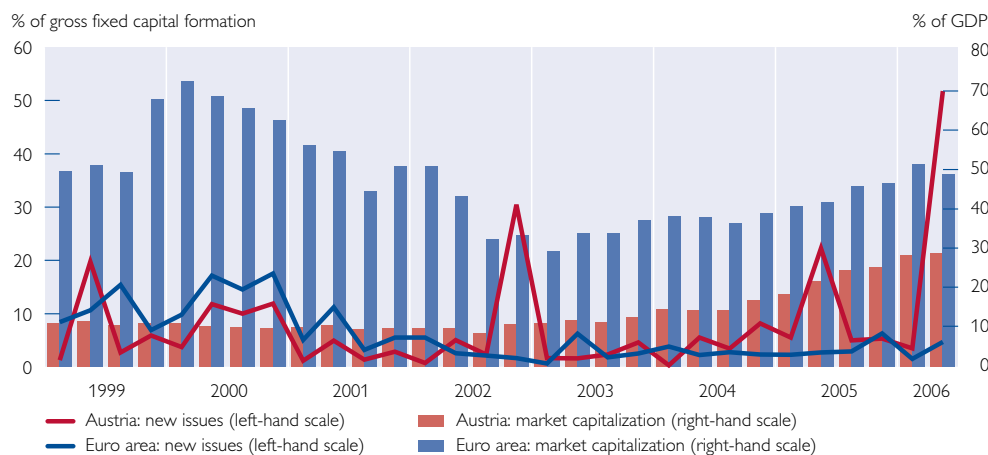
Capital Market Developments Informs External Financing Structure

Although high profits enabled Austrian companies to finance their activities largely from their own income, their external financing re-

⁵ The interest margin reflects not only the credit risk, but also the specific competitive situation of the Austrian loan market, which, while not influencing risk adjustment as such, does have an impact on the volume of risk adjustment.

Chart 6

New Issues¹ and Market Capitalization of Quoted Shares of Nonfinancial Corporations



Source: ECB, OeNB.

¹ Capital increases and new listings.

quirements surged by about 40% to EUR 14 billion in the wake of more animated investment activity and increased financial investment in the first half of 2006.

About 53% of external corporate financing was in the form of equity. As in 2005, the share of capital market finance exceeded that of funds provided by banks: the percentage of capital market instruments (bonds and quoted shares) in external financing practically doubled to 60%.

An especially large portion of funds was raised in the form of quoted shares in the first half of 2006. New issues on Wiener Börse AG came to about EUR 7.5 billion, with new listings accounting for some EUR 2.5 billion of this amount; the privatization of the Austrian postal service – Post AG – represented the highest volume among the new listings. Moreover, the stock exchange han-

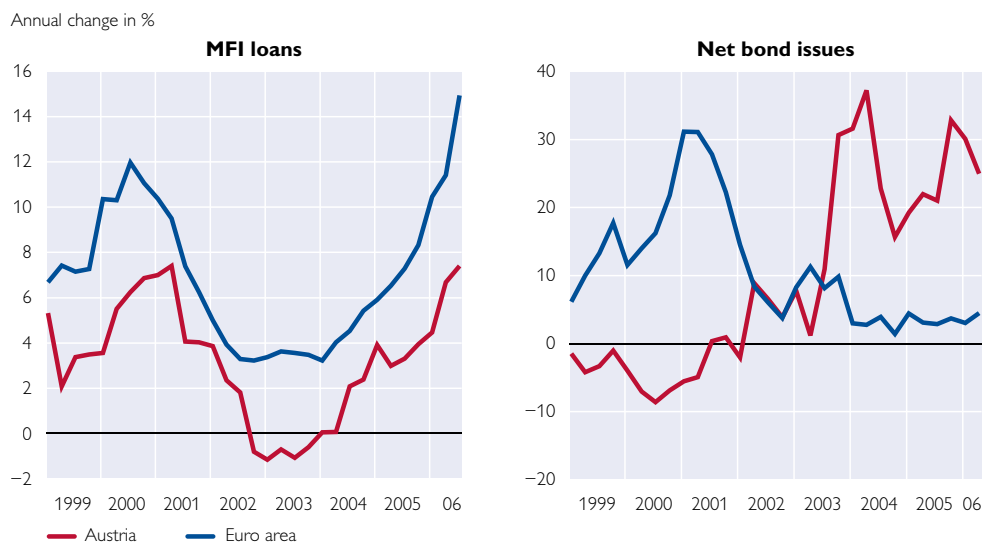
dled numerous capital increases, many of them of real estate companies. On the whole, service companies launched most of the issues on the Vienna bourse.

Thanks to the high issuing volumes, the market capitalization of the nonfinancial corporations listed on the Vienna stock exchange advanced by more than EUR 10 billion to EUR 71 billion in the first half of 2006 – an amount corresponding to some 28% of GDP.⁶ By contrast, the drop in stock prices in May 2006 acted as a damper on the rise in market capitalization on Wiener Börse AG, which had been fueled by stock price gains in the preceding years.

Among debt components, bond-based financing remained highly dynamic in the first half of 2006. According to the OeNB's securities issues statistics, the outstanding volume of corporate bonds went up by

⁶ The market capitalization of all stocks listed on Wiener Börse AG (including financial corporations) came to more than 48% of GDP at mid-2006.

Corporate Debt Financing



Source: ECB.
Note: Percentage change against the previous year on the basis of changes in transactions, i.e. adjusted for reclassifications, revaluations, exchange rate and other nontransaction changes.

more than 20% against the previous year, once again far more than the euro area equivalent.⁷

Bank lending to the corporate sector accelerated in tandem with the rise in investment; its annual growth rate came to 7.4% in the third quarter.⁸ Until recently, however, growth in this segment has lagged behind that observed in the euro area. All new loans to companies were denominated in euro; enterprises reduced their outstanding foreign currency loans by 2.2% year on year in August 2006.

According to the Austrian results of the Eurosystem bank lending survey, in the first three quarters of 2006, enterprises took out loans mainly to fund mergers and acquisitions or to finance corporate restructuring. Moreover, a key motive for

borrowing was to fund fixed capital formation. Bond issues, however, reduced enterprises' demand for bank loans.

As in previous years, in the first half of 2006, the financing of loans by foreign parent companies accounted for a substantial share of the corporate sector's external finance.

Rise in the Capital Ratio as Shown in the Financial Accounts Slows

Even though the end of the rise in stock prices on the Vienna stock exchange did not affect funding by means of stock issues until mid-2006, it probably did have an impact on companies' capital ratio as shown by financial accounts data. The rise in corporate capital ratios in recent years resulted not only from external equity financing, but also from the de-

⁷ By analogy to the ECB method, the outstanding volume of bonds is calculated as the percentage change against the previous year on the basis of changes in transactions, i.e. adjusted for reclassifications, revaluations, exchange rate and other nontransaction changes.

⁸ Bank lending to the corporate sector is also calculated using the ECB method.

velopment of stock prices. As international conventions prescribe that equity raised on the stock exchange be valued at current market values in the financial accounts, the Austrian capital ratio, which had been comparatively low for a long period, had been largely attributable to the low valuation of stock prices on Wiener Börse AG. When the Austrian Traded Index ATX caught up in the course of the last years, the Austrian capital ratio moved closer in line with the European average: While the Austrian capital ratio was still 24 percentage points below the European average in 2000, the gap narrowed to just under 13 percentage points in 2005. The end of the bullish trend on the stock market halted this development, and the capital ratio sank slightly in the second quarter of 2006. However, it should be noted that this decline stemmed exclusively from the calculation method and, considering the volatility of stock prices, is not necessarily indicative of an enduring development.

Interest Expenses Rise

Despite the dynamic growth of lending to the corporate sector (which was related above all to the rising significance of equity in the financing structure), the sector's exposure to interest rate risk has declined perceptibly in recent years.⁹ The share of bonds and loans in total corporate sector liabilities contracted from 62% to 54.6% between 2002 and 2005 (see chart 8, right panel).

How rapidly regular interest payments reflect interest rate changes depends not just on the amount of liabilities on which interest is paid, but also on the fixation periods of the amounts outstanding. As bond-based financing has become more widespread, so have longer-term interest rate fixations, given that bonds usually have fixed rates. Most bank loans are at variable rates, even those with longer maturities. In the first half of 2006, the structure of loans shifted slightly in favor of longer fixation periods. The share of loans at floating rates or up to 1 year initial rate fixation periods in new business dipped in recent months, but at about 90% remained very high in a euro area comparison.

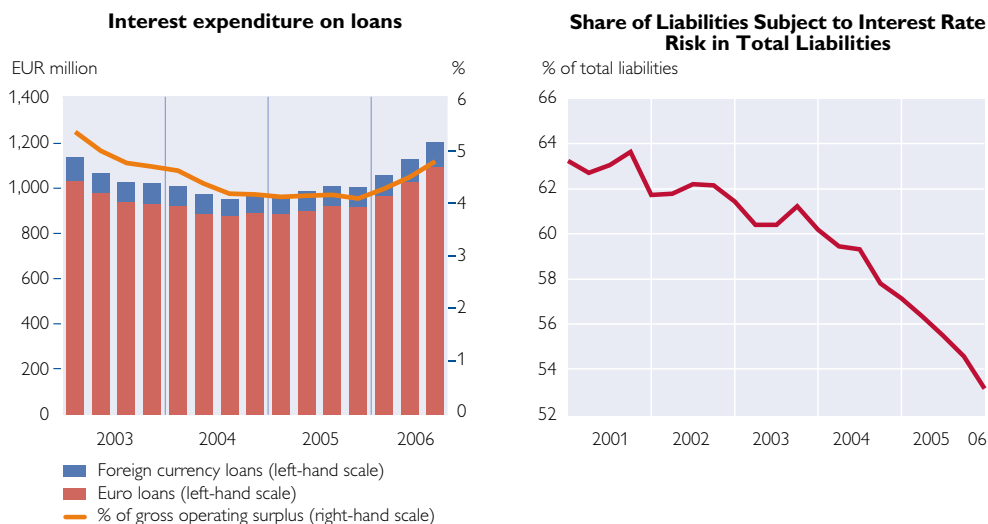
The corporate sector's interest expenditure is likely to rise slightly in 2006, both because enterprises took out more loans and because interest rates have increased. We multiplied the volume of loans outstanding by the relevant interest rates to obtain an estimate of the cost burden of interest payments on enterprises. To calculate interest on loans, we used the interest rates recorded in the interest rate statistics.¹⁰

This method only takes into account interest payments, but not non-interest rate charges (such charges are especially relevant in the case of foreign currency loans). Interest expenditure already edged up in nominal terms in 2005; in 2006, it also rose in relation to corporate profits (the gross operating surplus), though it still re-

⁹ This aggregated perspective does not take into account the corporate sector's use of hedging instruments (and the possible risks associated with such instruments).

¹⁰ The interest rates for new business (both corporate and household) were used to determine interest on foreign currency loans, as the interest rate statistics do not contain any data on outstanding amounts of foreign currency loans. As the lion's share of foreign currency loans is at variable rates, which are adjusted periodically, the inaccuracy of this method is not likely to be very large.

Interest Rate Risk in the Corporate Sector



Source: OeNB, Thomson Financial.

Note: Interest expenditure on euro loans: euro loans to nonfinancial corporations according to MFI balance sheet statistics multiplied by the corresponding interest rates on outstanding amounts according to the ECB interest rate statistics. Interest expenditure on foreign currency loans: foreign currency loans to nonfinancial corporations according to MFI balance sheet statistics multiplied by the corresponding interest rates on U.S. dollar, Japanese yen and Swiss franc loans to households and nonfinancial corporations according to the ECB interest rate statistics. Liabilities subject to interest rate risk: loans and bonds.

mained markedly below the 2003 values. Considering that the calculation is an approximation, these figures are surrounded with uncertainty. Nevertheless, they do indicate that higher interest expenditures are beginning to negatively affect the risk-bearing capacity of the corporate sector, even though the share of items on which companies pay interest in their financing structure is declining.

Push to Reduce Foreign Currency Loan Exposure

Companies have reduced their exchange rate risk substantially in recent years. The share of foreign currency loans in the corporate portfolio came to just 11.6% at the end of September 2006, down 6 percentage points from three years earlier. Moreover, the share of foreign currency-denominated corporate bonds has fallen markedly in recent years. This trend has helped keep exchange rate effects on foreign currency loans

fairly small in the past few quarters (see chart 9, left panel). It should be noted that these exchange rate effects are purely unrealized rather than realized losses or gains.

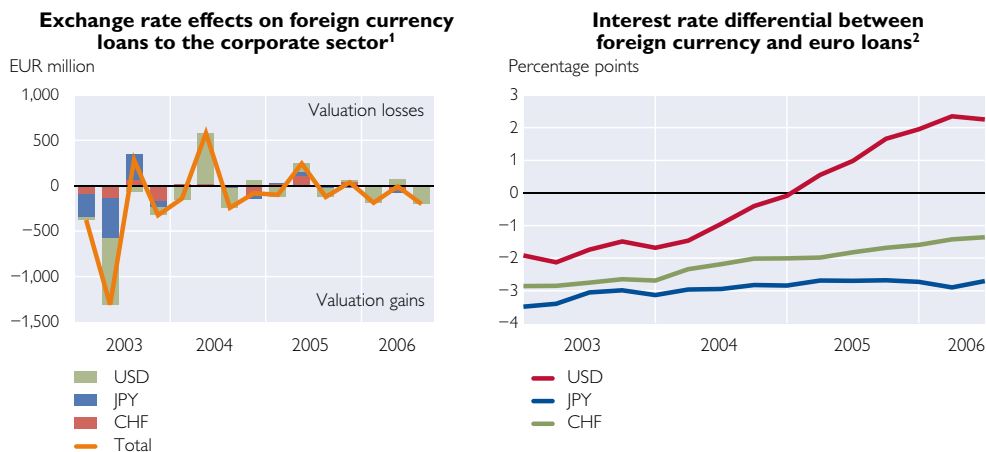
The share of loans denominated in Japanese yen has sunk considerably below the share of U.S. dollar-denominated financing, implying that the respective exchange rate risk incurred increasingly corresponds to a real transaction. This decline in foreign currency lending was probably influenced measurably by the narrowing differential of interest rates on foreign currency and on euro loans (see chart 9, right panel).

Corporate Risk Perspective Worsens Slightly

The corporate sector's risk position was quite positive at mid-2006: After expanding robustly in recent years, the capital ratio exceeded the values of the previous years, and the debt ratio was below the highs it had posted

Chart 9

Foreign Exchange Risk in the Corporate Sector



Source: OeNB.

¹ Exchange rate change multiplied by the loan volume (average of the current and previous month).

² Interest rate statistics data on new business: Interest rate for loans to households and nonfinancial corporations in U.S. dollars, Japanese yen and Swiss francs minus interest rate for euro loans to nonfinancial corporations.

in the past years. The increased equity ratio and the greater reliance on bond financing have reduced the relative dependence of corporate finance on interest rate developments. Companies have also cut their foreign currency risk exposure substantially. The (until recently) unbroken rise in profits and the positive economic outlook have also given no indication of a sudden slump in profits.

However, in the first half of 2006, signs of a marginal worsening in companies' risk-bearing capacity arose: Financial market developments had underpinned the corporate sector's financial position in recent years, but no longer did so in 2006. Although financing conditions are still favorable by historical standards, they have been impaired somewhat by higher interest rates and the downturn in stock prices on the Vienna stock exchange. At the same time, the end of the sharp rise in stock prices has halted the catching-up process of the

capital ratio at least temporarily. The corporate debt ratio augmented marginally in the second quarter of 2006. The high share of variable rate loans in corporate borrowing has, however, caused companies' financing costs to go up recently. To sum it up, the corporate sector's risk position deteriorated slightly in the first half of 2006.

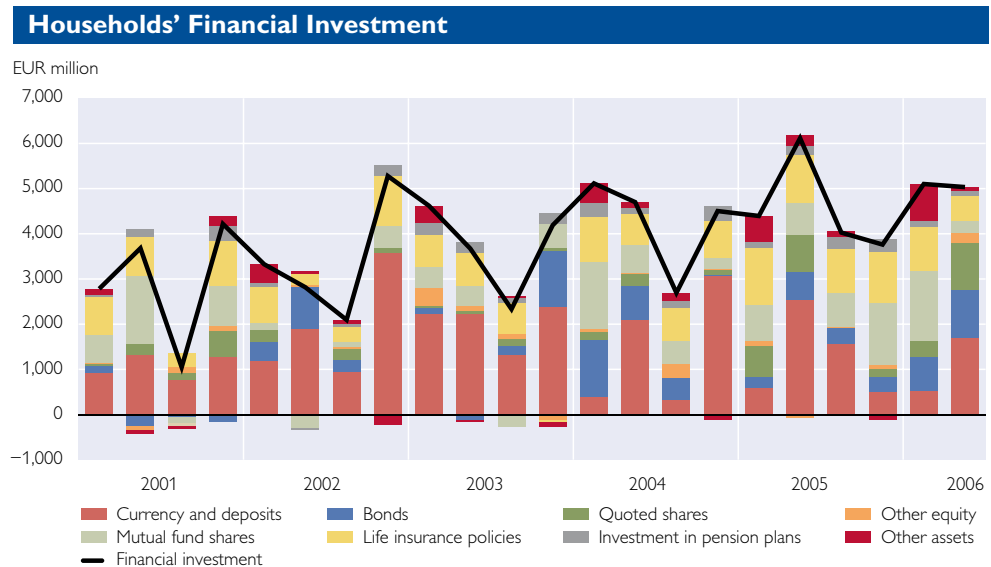
Households' Financing Situation Deteriorates Slightly

Employment Climbs, Real Wages Merely Edge Up

A look at developments on the labor market shows a powerful rise in employment,¹¹ which – together with a greater number of persons in training programs – resulted in a decline in unemployment figures. Unlike in the last few years, real incomes are also expected to advance in 2006. The saving ratio has been on the rise since 2001. It came to 9% in 2005 and is anticipated to augment further in

¹¹ Both full and part time employment.

Chart 10



Source: OeNB.

2006. The number of private bankruptcy cases in the first three quarters of 2006 was 16% higher than in the same period of 2005; at the same time, the amount of bankruptcy liabilities enlarged by only 5.2%.

Long-Term Securities Account for Half of All Financial Investment

In the first half of 2006, stocks, bonds and mutual fund shares accounted for almost half of households' total financial investment. By category, financial investment differed markedly in the first and second quarters of 2006. As enterprises raised substantial capital on the Vienna stock exchange (Wiener Börse AG) in the second quarter, household direct investment in stocks listed on the stock exchange was very high.

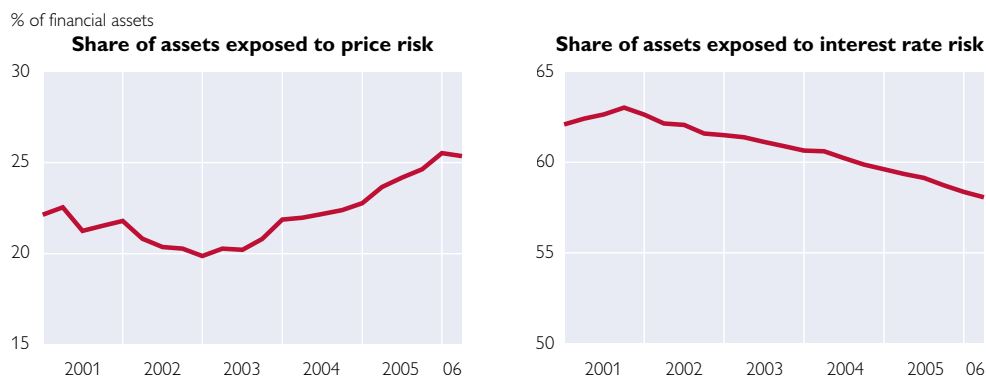
Households' financial investment is subject to interest rate risk (deposits, bonds and mutual fund shares¹²) and price risks (quoted stocks, bonds and mutual fund shares). The growth of the share of household financial assets subject to price risk since 2003 reflects Austrian households' greater investment in marketable instruments. In the past five years, quoted stocks have made especially large gains among household financial assets exposed to price risk. Therefore, the share of assets in this category whose price risk results from stock price changes (quoted stocks, mutual fund shares¹³) expanded more than the share of assets subject to price risk on account of interest rate changes (bonds).¹⁴

¹² In the case of mutual fund shares, only fixed-income (bond-based) funds should be taken into account; however, the financial accounts statistics do not distinguish between different types of mutual funds.

¹³ This calculation should only take into account equity funds. The mutual fund statistics show that Austrian mutual fund assets covering about 95% of the assets that Austrian households invest in mutual funds break down into bonds (54%), mutual fund shares (23%) and stocks (16%).

¹⁴ As structured products are gaining ground, it will become harder to distinguish between individual components in the future.

Chart 11

Risk Exposure of Household Investment

Source: OeNB.

Note: Assets exposed to price risk: debt securities, quoted shares and mutual fund shares.

Assets exposed to interest rate risk: deposits and mutual fund shares. Only bond funds should be taken into account in the case of mutual fund shares, but no separate data are available.

While the share of assets subject to price risk has risen, the share of assets subject to interest rate risk has steadily diminished in recent years. For the purpose of this analysis, only the direct effects of an interest rate change are taken into account, not the indirect impact e.g. on stock price developments. 85% of the assets subject to interest rate risk are deposits; they account for nearly half of all household financial assets. Clearly, the household sector's relative risk exposure has shifted from interest rate risk to price risk. Hence, capital market developments now have a greater impact on the valuation of household financial assets.

Capital Market Valuation Losses in the Second Quarter of 2006

With stock prices sliding, households' stock investments suffered valuation losses in the second quarter of 2006, following valuation gains in the first quarter. Bond prices declined in the wake of interest rate hikes, resulting in valuation losses of bond investments in the first half of 2006. Developments on the stock and bond markets had repercussions on mutual

funds, which consequently faced valuation losses in the first half of 2006. Overall, households chalked up valuation gains on their capital market investments in the first half of 2006, but these gains fell short of the profits made in 2004 and 2005. When the ATX recovered in autumn 2006, households enjoyed valuation gains once again. In any case, the drop in prices in the second quarter clearly demonstrated the risks involved in investing in capital markets.

Financial Assets Highly Intermediated

Households may bear the entire valuation risk of their assets or let other sectors (e.g. intermediaries) bear (part of) it. Some 65% of household financial assets are highly intermediated (deposits and life insurance policies), 15% to a medium degree (mutual fund shares and investment in pension fund plans), and about 20% to a low degree (direct investment in capital markets, shares and other equity). As a case in point, mutual fund shares represent about 45% of all capital market securities – stocks, bonds and mutual fund shares – in Austrian

Chart 12

Valuation Gains and Losses in Household Financial Assets



Source: OeNB.

Note: Value for 2006 calculated as net changes adjusted for transactions.

households' portfolios. Unlike private investors, mutual funds are equipped to operate on the basis of professional risk management principles. Typically, mutual funds' investment is more diversified than that of households, which invest directly. Therefore, mutual funds are able to reduce the risk arising from price changes of individual stocks. Consequently, households may reduce the risk involved in investment on capital markets by investing in mutual fund shares. Additionally, households do not assume the full risk of investment in life insurance policies (15% of household financial investment) either, as this investment comes with minimum capital guarantees.

Assessments of the risk aspect of investment in life insurance policies and in pension plans must take into account these assets' long-term investment horizon. The assets invested in these two instruments cannot be withdrawn at short notice, or only at a cost; therefore, households cannot use them to cover expenses, e.g. in the case of income losses. The share

of assets invested in pension plans rose from 1.6% at the end of 1995 to 3.6% at the end of the first half of 2006, that invested in life insurance policies increased from 11% to 15%.

Weak Credit Growth

The growth of credit to Austrian households in the first nine months of 2006 fell short of the year-earlier value. In September 2006, the annual rise in monetary financial institutions' (MFI) lending to households came to 6.1%, adjusted for nontransactional changes. Consumer loan growth declined more than home loan growth. Austrian households' new debt consisted mainly of housing loans, which accounted for 55% of new loans and about half of households' liabilities.

Credit growth is much higher in the euro area as a whole than in Austria, and the decrease in credit growth started much later in the euro area. Housing price developments and structural changes on credit markets in some euro area countries may be implicated in the difference in credit

developments between Austria and the euro area.

Housing loans are generally secured by real estate. Real estate price growth has accelerated since mid-2005 (annual growth of the price for owner-occupied housing in the second quarter of 2006: 6.8%). In the preceding years, however, real estate prices tended to grow at a slower rate than in the euro area. Consequently, no significant valuation losses of real estate or problems for housing loans resulting from valuation losses are on the horizon.

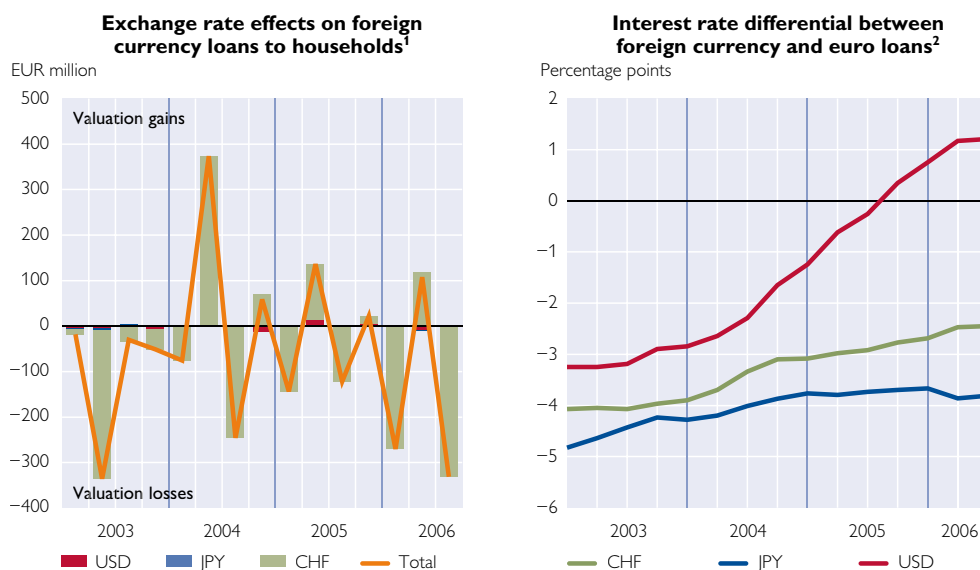
Foreign Currency Loans Remain an Important Source of Finance

The share of foreign currency lending in the total volume of loans outstanding edged up again slightly in the first half of 2006 and came to about 32%. By currency, Swiss franc-denominated loans have expanded to account for

over 96% of foreign currency loans; all other currencies have come to play a negligible role. In terms of currencies' exchange rate volatility record, the Swiss franc showed less fluctuation in the past than the Japanese yen or the U.S. dollar. However, in the second quarter of 2006, movements of the Swiss franc exchange rate resulted in valuation losses of Swiss franc-denominated loans. But overall, foreign currency loans posted valuation gains in the first nine months of 2006. The interest rate differential between Swiss franc-denominated and euro-denominated credit has been contracting steadily since 2004. Interest rate increases in Switzerland have increased the interest rate burden on foreign currency loans. As foreign currency loans are bullet loans with variable interest rates, interest rate hikes impact fairly rapidly on the entire initial lending volume.

Chart 13

Foreign Exchange Risk in the Household Sector



Source: ECB, OeNB.

¹ Exchange rate change multiplied by the loan volume (average of the current and previous month).

² ECB MFI balance sheet statistics data: Interest rate for loans to households and nonfinancial corporations in USD, JPY and CHF minus interest rate for euro loans to households.

Credit Standards Deteriorate Slightly

Standards on loans to households worsened somewhat in the first three quarters of 2006. The interest rate increases in the euro area have already had a noticeable effect on consumer lending, causing both nominal and real interest rates to rise. By contrast, interest rates on housing loans have gone up only a bit. In new business, the effective rate of interest on consumer loans was 87 basis points higher at the end of the third quarter of 2006 than one year earlier; the rise came to 67 basis points for housing loans. Overall, lending rates are still to be considered low.

According to the bank lending survey results, the standards for housing loans and consumer loans also differed. Standards for housing loans

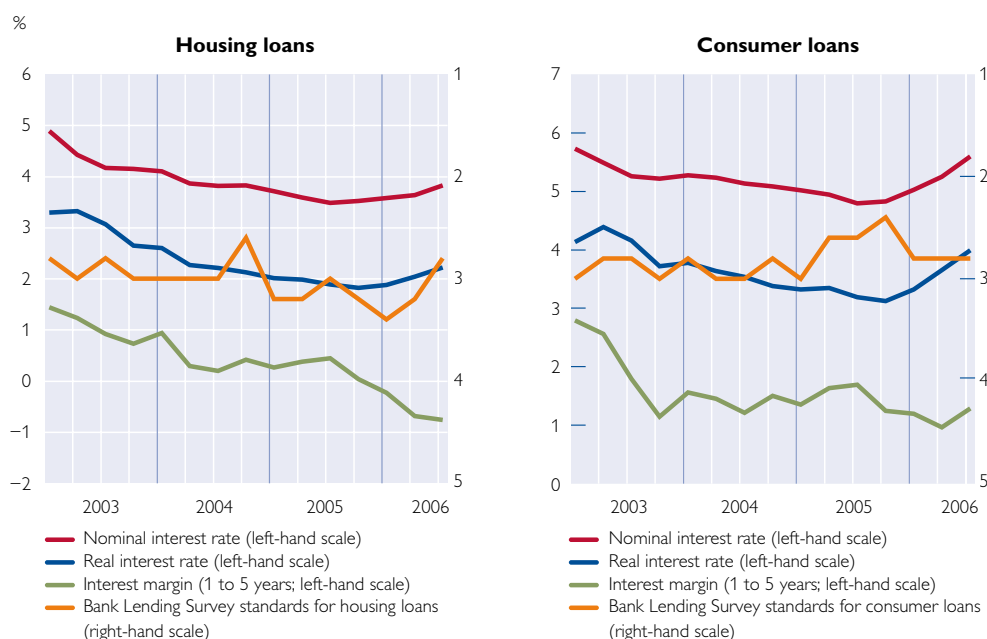
were eased further in the first half of 2006 and tightened marginally only in the third quarter of 2006, whereas standards for consumer loans were tightened successively from 2005 onward.

Interest Rate Burden Rises

The rise in interest rates along with higher debt increased households' interest expenditure on personal loans. As variable rate loans represent a fairly large share of household credits, higher interest rates translate relatively quickly into higher interest expenditure by households. The share of variable rate loans in new housing loans stood at roughly 50% and at over 90% for new consumer and other loans to households. Foreign currency loans are strictly at variable rates.

Chart 14

Standards for Household Loans



Source: ECB, OeNB.

Note: Right-hand scale ranging from 1 (tightened considerably) to 5 (eased considerably).

Real interest rate: Nominal interest rate less the OeNB's HICP forecast for the year following the forecast date.

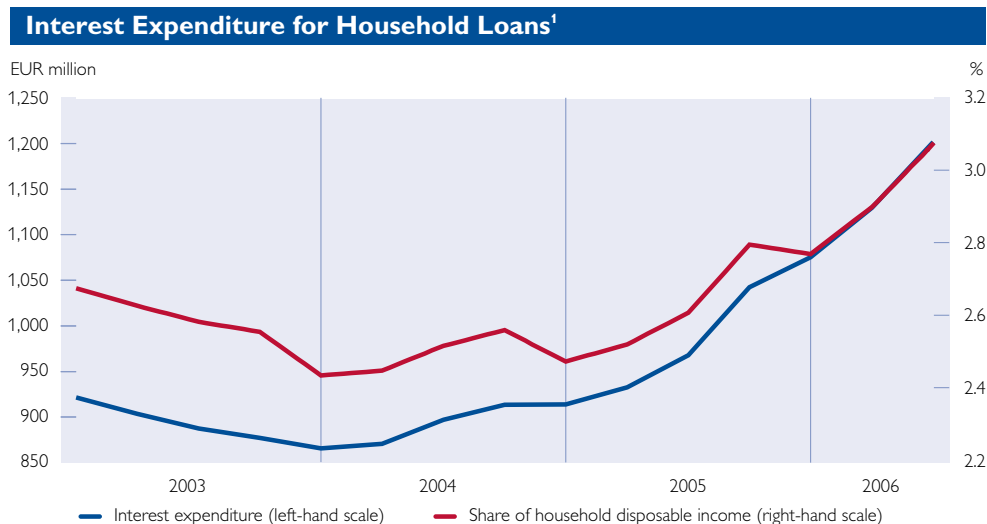
Interest margin: Interest charged for loans with a maturity of 1 to 5 years less three-year swap rate.

Bank Lending Survey credit standards: Changes in the credit standards for loans to households over the last three months.

Interest expenditure¹⁵ has been on the rise since the beginning of 2004. The lift in interest rates since the third quarter of 2005 has accelerated the rise in interest expenditure. The share of household disposable income (according to national accounts)¹⁶ spent to pay interest on loans averaged 3.1% in the third quarter of 2006. This value rose by 0.5 percentage point from the third quarter of 2005. Interest expenditure did not increase by much considering the size of the key interest rate increases in the euro area, a circumstance that may be explained by the fact that interest rates of loans outstanding, in particular of housing loans, were raised only marginally or have not been lifted yet. Therefore, most of the higher interest burden stemmed from

stepped-up interest expenditure on consumer loans (more consumer loans are at variable rates than housing loans) and on Swiss franc-denominated foreign currency loans (always at variable rates). However, when interpreting interest expenditure figures, it must be noted that the result is only an estimate of the cost burden of loans on households and that other factors are disregarded, e.g. non-interest related charges and subsidies, with the latter playing an important role especially for housing loans. Additionally, only interest payments, not payments of principal are considered. Finally, interest expenditure is determined by relation to the total disposable income of all households, including households that have not taken out a loan. A household survey conducted by the OeNB¹⁷

Chart 15



Source: OeNB.

¹ Volume of loans outstanding multiplied by the interest rate for loans outstanding according to the interest rate statistics (interest rate for new businesses in the case of foreign currency loans).

¹⁵ Interest expenditure for household loans is calculated as the product of the volume of loans by maturity and purpose, and of the respective interest rate.

¹⁶ Disposable income also covers the income of nonprofit institutions serving households. The calculations are based on provisional OeNB forecast values.

¹⁷ Compare Beer, C., P. Mooslechner, M. Schürz and K. Wagner, 2006. Austrian Households' Financial Wealth: An Analysis Based on Microeconomic Data. In: Monetary Policy & the Economy Q2/06. OeNB. 94–110.

indicates that 40% of all households have taken out a loan. For these households, interest expenditure relative to income is correspondingly higher.

Household Financial Risk Increases

While in 2005 households benefited from strong valuation gains on capital markets and very low interest rates on loans, capital market and interest rate developments in the first half of 2006 tended to have a negative effect on households' financial situation. These developments contrast with the surge in employment in the first half of 2006, which also resulted in lower jobless figures.

As the share of variable rate loans in households' portfolios is large, the household sector's financial liabilities are subject to sizeable interest rate risk; because they also contain a substantial share of foreign currency loans, they are subject to nonnegligible exchange rate risks and risks associated with the repayment vehicles as well.

In a euro area comparison, though, household debt is relatively low in Austria (2005: 54.2% of GDP). Household debt differs widely among euro area countries and averaged 63% of GDP in 2005.

Moreover, while interest rates on loans rose in the first half of 2006,

they nevertheless remained low in a long-term comparison. An assessment of the interest burden on households must also take into account that the household sector's total deposits exceed the total amount of outstanding loans. Hence, depending on the respective development of deposit and lending rates, in aggregate terms households' interest income could in fact rise more than their interest payments. From a financial stability perspective, though, the risks associated with higher interest payments outweigh the advantages of higher interest income.

In the second quarter of 2006, the valuation risk of households' investment on the capital markets materialized. When interpreting the financial stability aspect of valuation risk, one must not forget that most of the investment in long-term securities in the household sector is concentrated in the upper income and wealth deciles.¹⁸ Thus, the holders of risky investment products are mostly households that should be in a position to absorb potential price losses. However, as saving for retirement by investing in capital markets has gained importance, developments in capital markets will play a greater role in assessing the financial stability of the household sector in the future.

¹⁸ Compare Beer et al. 2006. *op. cit.*

Austria's Financial Intermediaries Are on a Dynamic Growth Path

The Austrian Banking System Has Become More Resilient to Shocks

Total Assets Continued to Increase Sharply

Mirroring the trend of recent months, Austrian banks' total assets continued to grow in 2006. Unconsolidated assets as reported by banks for the end of June 2006 totaled approximately EUR 765 billion, reflecting a 5.5% increase since the beginning of the year and a 9.7% increase compared with the same month of 2005. The share of the five largest banks¹ in this aggregate remained virtually unchanged at 44.3% even though their total assets expanded by an above-average 13% year on year. On a consolidated basis, the assets of the Austrian banking sector grew by 10.8% to EUR 874 billion in the year to June 2006.²

As in previous periods, external business was the key driver of the increase in Austrian banks' unconsolidated total assets.³ External assets increased by 10.3% from January to June 2006 (thus contributing 63% to overall growth) and by as much as 16% from June 2005 to June 2006. This compares with a more moderate rise of 6.5% in the domestic share of assets, and an expansion of external liabilities by 7.9% in the June 2005-to-June 2006 period.

The strong growth of cross-border activities is also reflected by individual balance sheet items. While domestic interbank claims rose by 2.9% year on year, claims on foreign banks jumped by 16.2%; and while claims on domestic nonbanks expanded by 6.4%, claims on foreign nonbanks climbed by 11.9% in the same period. Foreign interbank claims accounted for 50.3% of total external assets, and claims on foreign nonbanks for 27.3%.

Mirroring developments on the assets side, foreign interbank liabilities jumped by 15.4% and liabilities to foreign nonbanks by 16.8%, compared with a more moderate rise of 3.4% in liabilities to domestic banks and of 5.1% to domestic nonbanks.

The nominal value of special off-balance financial transactions (derivative business) totaled EUR 1,565 billion on June 30, 2006, which reflects a slight increase by 2.4% over the previous 12 months. Quantitatively, this volume is basically twice the amount of unconsolidated assets, but the meaningfulness of such a comparison is of course limited.⁴

The ongoing decline of banking offices in Austria has continued also in 2006. As at June 30, 2006, 5,165 banking offices operated in Austria, which reflects a reduction by 59 offices compared with mid-2005.

¹ Bank Austria Creditanstalt AG (BA-CA), Erste Bank der oesterreichischen Sparkassen AG (Erste Bank), Raiffeisen Zentralbank Österreich AG (RZB), Bank für Arbeit und Wirtschaft und Österreichische Postsparkasse AG (BAWAG P.S.K.) and Österreichische Volksbanken AG (ÖVAG).

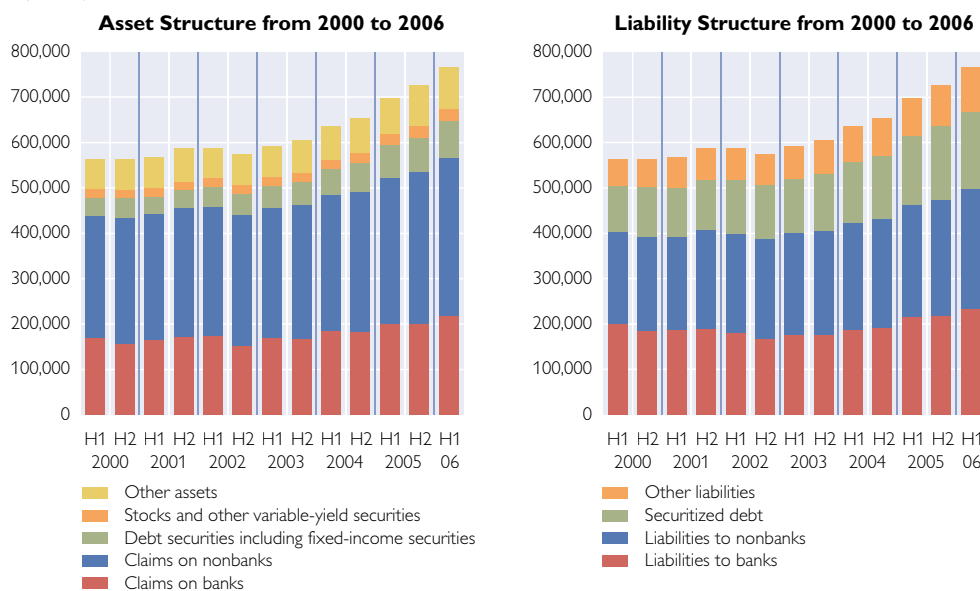
² As banks use different financial reporting systems, aggregated data may provide a slightly distorted picture.

³ An expansion of cross-border activities has also been reported at the international level (see for instance BIS Quarterly Review, September 2006, pp. 11, or the IMF's Global Financial Stability Report, September 2006, especially chapter 2).

⁴ Nominal figures do not provide a direct indication of the underlying risk of the derivatives business. Moreover, it should be noted that the position of off-balance sheet financial transactions tends to fluctuate heavily.

**Balance Sheet Structure of the Austrian Banking Sector
(on an Unconsolidated Basis)**

EUR million



Source: OeNB.

Profits Continued to Grow

Seizing upon a favorable business climate in both Central and Eastern Europe (CEE) and in Austria, Austrian banks improved their operating results further in the first half of 2006.

On a consolidated basis, the entire sector⁵ managed to improve its operating profits by 19% to EUR 4.5 billion in the first half 2006 compared with the same period one year earlier. Furthermore, the operating profit margin⁶ improved from 0.92% in 2005 to 1.04% in the first half of 2006, even though total assets were pushed up by new acquisitions and dynamic business conditions in Central and Eastern Europe. At the same time, the cost/income ratio continued to drop in the first half of 2006, from 63.3% in 2005 to 61.7%. Oper-

ating income rose by 14%, whereas operating costs increased by 11%. Fee income accounted for slightly more than half of overall operating income growth, thus remaining the key driver of income. The second key pillar (close to 40%) was interest income, which includes income from participating interests on a consolidated basis, and which moreover reflects the highly profitable lending and deposit-taking business in Central and Eastern Europe. Trading transactions, finally, contributed somewhat more than 10% to income growth.

Credit risk costs accounted for 9% of operating costs in the first half of 2006, compared with 11% in 2005. After tax, the period result was 44% higher than in the first half of 2005, while the consolidated return on as-

⁵ The aggregation of financial statements prepared in compliance with either the Commercial Code or the International Accounting Standards may result in minor imprecision.

⁶ Consolidated operating profit to consolidated total assets.

sets (ROA) improved considerably from 0.63% in 2005 to 0.72% in the first half of 2006.⁷

Domestic Interest Margin Narrowing Continually

While operations in Central and Eastern Europe account for the lion's share of Austrian banks' steadily rising profits, profitability has been improving also on the domestic market. The analysis of unconsolidated results, which reflects the domestic performance, shows that operating profits continued to rise in the first half of 2006, albeit, at a rate of 7%, somewhat less strongly than before. Unconsolidated operating income growth weakened slightly to 7%, whereas operating costs expanded somewhat more strongly (also by 7%). Fee income is the main driver of income growth also in domestic operations.

Reflecting higher credit growth in the first half of 2006 compared with the first half of 2005, unconsolidated interest income inched up 0.4%. At the same time, the interest margin – which ten years ago had stood at 1.75% – continued to decrease markedly, by 11 basis points to 1.03%. This decline mirrors the steady decrease in operating costs in relation to total assets since 1996, the strong increase in interbank competition and the sharp increase in foreign currency loans as well as – to a lesser extent – the rising share of noninterest income.⁸ Looking ahead, the in-

terest rates on new business would not imply an improvement of the interest margin. The difference between the interest rates on euro loans and euro deposits⁹ has in fact been below 1% since mid-2006 according to interest rate statistics.

Meanwhile, as much as 56% of unconsolidated operating income is noninterest income, compared with just 40% ten years ago. The higher growth rate of noninterest income observed in the past has also gone hand in hand with somewhat higher volatility. Yet the robust economic growth in recent quarters as well as the favorable economic outlook continue to support operating profits and the individual income categories.¹⁰

Loan Growth Increased Considerably

In recent months lending by banks operating in Austria has increased considerably. In August 2006, loans outstanding to domestic nonbanks totaled EUR 274.4 billion, which corresponds to a growth rate of 6.5% year on year, compared with a growth rate of 4.8% registered in August 2005 (see chart 17). Thus, the favorable economic climate seems to have compensated for dampening supply-side implications for loan growth, such as this year's further increases of the ECB's key rates and the subsequent interest rate pass-through to retail rates.

The considerably higher growth rate of loans to domestic nonbanks compared with earlier periods is

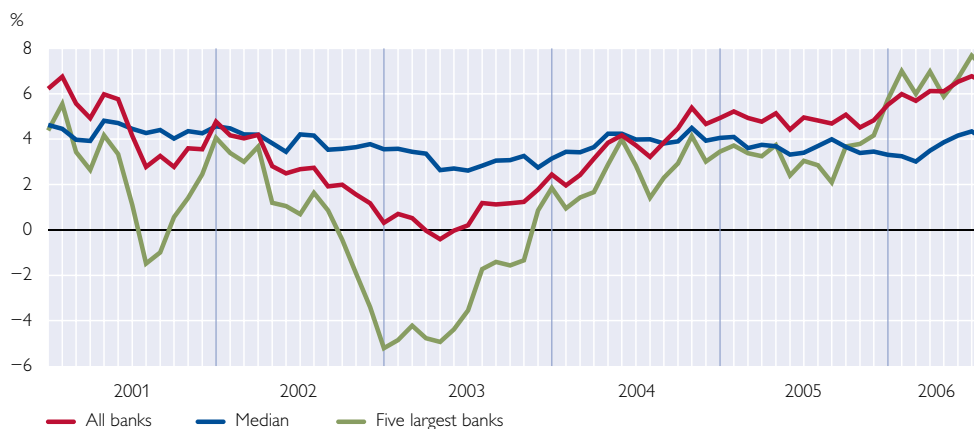
⁷ This increase reflects the sale of HVB Splitska banka by BA-CA in the first half of 2006 for EUR 684 million. Without this transaction, ROA would have been broadly unchanged from 2005.

⁸ See the paper by David Liebeg and Markus S. Schwaiger on "Determinants of the Interest Rate Margins of Austrian Banks" in this issue.

⁹ The interest rates are calculated as the volume-weighted average rates applied to all euro-denominated loans and deposits of households and nonfinancial corporations.

¹⁰ See Financial Stability Report 11. OeNB, June 2006. 40–41.

Growth of Loans to Austrian Nonbanks



Source: OeNB.

likely to reflect above all lending by the largest banks and, among them, by a few particular banks. The annual growth rate of the amount of loans outstanding of Austria's five largest banks (in terms of total assets) came to 7.1% in August, compared with 2.9% a year earlier. At 4%, the median loan growth rate was considerably below the figure for the largest banks in August 2006.

A breakdown by banking sectors shows that – leaving aside special purpose banks – annual loan growth was particularly robust in the Raiffeisen sector (11.9% in August 2006). By comparison, the joint stock bank sector reported particularly weak lending growth rates in the first half of 2006 (3.1% in August 2006), similar to building and loan associations, which were bringing up the rear in recent months (2.3% in August 2006).

Share of Foreign Currency in Household Loans Remained High

Developments in 2006 have so far mirrored the pattern observed since 2002 in foreign currency borrowing: demand from nonfinancial corporations has weakened, while demand

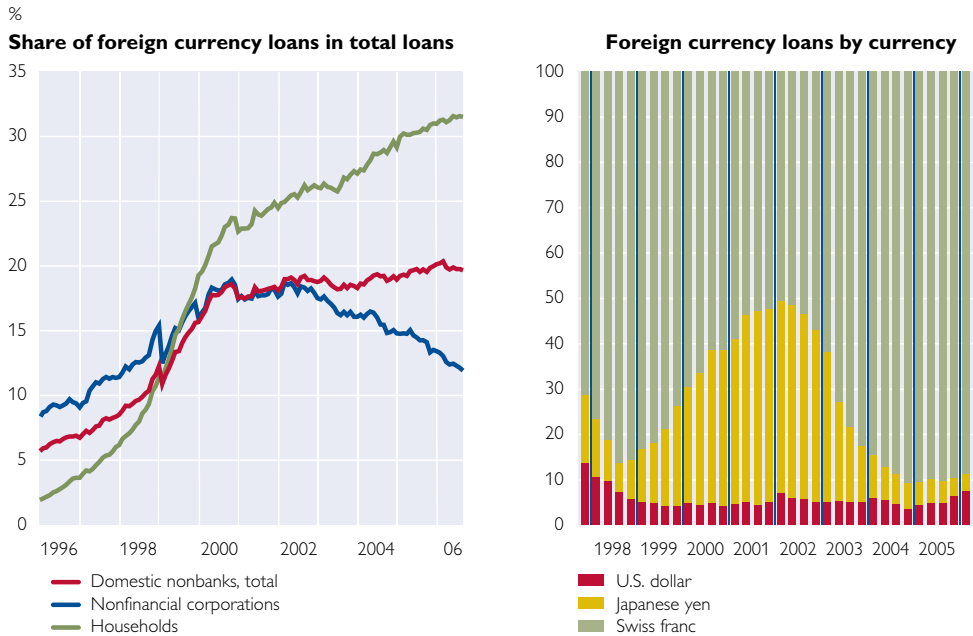
from households has continued to grow. In August 2006, foreign currency loans accounted for 31.5% of all loans taken out by households, which is close to the historical peak. This compares with a figure of 11.9% for nonfinancial corporations, which was well below the historical peak of almost 19%. Households and businesses apparently judge the advantages and underlying risks of foreign currency loans in fundamentally different ways. However, the statistics show that in the two provinces leading the ranks of foreign currency borrowers (Tyrol and Vorarlberg) households have become more cautious about foreign currency loans in recent periods.

On balance, EUR 53.9 billion foreign currency loans were outstanding to domestic nonbanks in August 2006, which translates into a foreign currency share of 19.7%. Regarding currency allocation, the share of the Swiss franc increased slightly from high levels and accounted for the lion's share at 89.8% in August 2006. In contrast, the share of Japanese yen-denominated loans shrank to 3%.

In a joint initiative, the Financial Market Authority (FMA) and the

Chart 18

Foreign Currency Loans in Austria



Source: OeNB.

Oesterreichische Nationalbank (OeNB) at the end of June 2006 launched a brochure educating the public about the risks of foreign currency borrowing. The brochure, which is available at bank branches throughout Austria, provides a clear and concise overview of the risks of such financing instruments. This joint initiative reflects the continued concerns that the FMA and the OeNB have about households' strong demand for foreign currency loans and is an attempt to enhance households' risk awareness.

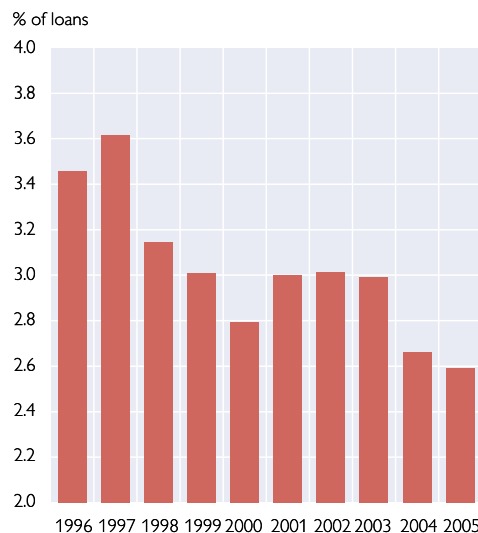
Loan Quality Continued to be Favorable

Austrian banks have benefited from a favorable loan cycle since 2003. With the rise in loan growth since 2003, loan quality improved as well, and continued to do so in 2006. Data on nonperforming loans, which are available only on an annual basis, show that the share of loans that had to be written down or off decreased

steadily from 3.0% in 2003 to 2.6% in 2005 for all banks operating in Austria (see chart 19).

Chart 19

Nonperforming Loans



Source: OeNB.

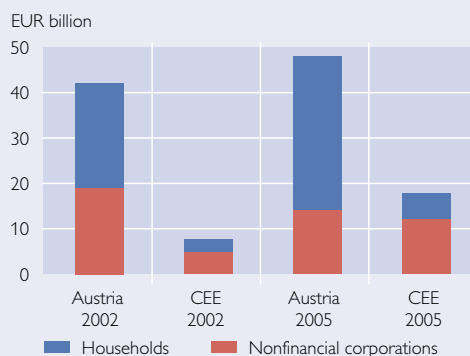
The development of specific allowances for impaired loans implies that the loan quality should remain

Foreign Currency Lending Risks of Austrian Banks

are Basically Domestic Risks

Foreign currency lending by Austrian banks is not limited to domestic clients; foreign currency loans are also extended to foreign clients, above all to residents of the Central and Eastern European countries in which Austrian banks' subsidiaries hold substantial market shares. In the case of the latter, these loans are basically euro and, in addition, Swiss franc loans. At present, there are no statistics available on the amount of foreign currency lending by Austrian banks' CEE subsidiaries. Therefore the underlying risks of foreign currency lending (including loans indexed to foreign currency loans) in Bulgaria, Croatia, the Czech Republic, Poland, Romania, Slovakia – i.e. the CEECs most relevant for Austria – must be estimated to be able to compare them with the corresponding Austrian figures. For the purpose of these estimates, it was assumed that the Austrian subsidiaries' share in the aggregate amount of foreign currency loans taken out by nonfinancial corporations and households in the individual CEECs corresponds to their local market share in terms of total assets. With the exception of Croatia, the estimates are based on data compiled by the ESCB Working Group on Macroeprudential Analysis (WGMA) in the first half of 2006.

Outstanding Foreign Currency Loans of Austrian Banks



Source: WGMA, OeNB.

As shown by the chart, the estimated amount of foreign currency loans of Austrian subsidiaries in the major CEECs was still considerably below the amount outstanding in Austria at the end of 2005. Yet growth rates in this field were considerably higher in those countries than in Austria. Between 2002 and 2005 foreign currency loans extended to CEE residents increased eight times as fast as foreign currency loans to Austrian residents, with over two-thirds of the expansion attributable to new business and close to one-third attributable to gains in market share. In addition, direct loans extended by the parent banks to CEE clients, which are not covered by these calculations, increase the total foreign

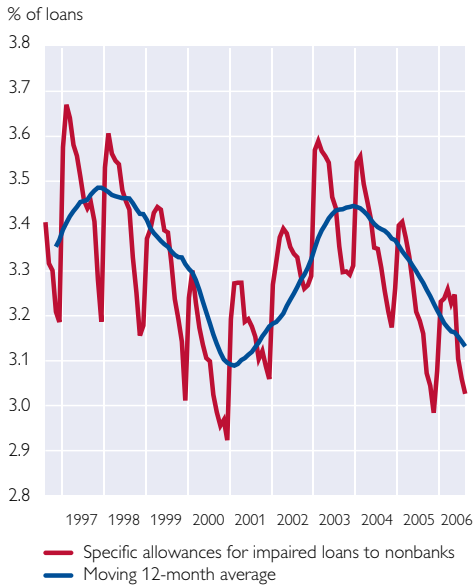
currency exposure of the Austrian banking system by another estimated EUR 10 billion in 2005.

Thus, the underlying risk of foreign currency lending by Austrian banks is clearly concentrated on the domestic side of business, but not for quantitative reasons alone. As the chart shows, the bulk of foreign currency loans taken out in CEECs goes to nonfinancial corporations, whereas in Austria the amount of foreign currency household loans is twice as high as the corporate share. As household loans are less likely than corporate loans to be hedged against exchange rate risk naturally or with derivatives, households are more exposed to currency risk. Moreover, unlike in most CEECs, foreign currency loans in Austria tend to be bullet loans linked with repayment vehicles, which creates a concentration risk over time and additional market risks.

Chart 20

Specific Allowances for Impaired

Loans to Nonbanks



Source: OeNB.

satisfactory in 2006. In August 2006, specific allowances for impaired loans reported by Austrian banks corresponded to 3.0% of loans to nonbanks, 0.2 percentage point less than in August 2005.¹¹ In fact, apart from 2000, such allowances have not been as low since 1995 (see chart 20).

The historically already relatively low specific allowances for impaired loans, the steady improvement of the quality of loans over the past three years as well as the fact that such cycles have typically lasted two to three years (see chart 20) would imply that a turnaround may be in the offing. In addition, the slight deterioration of financing conditions might adversely affect the risk assessment of Austrian banks' loan portfolios. In contrast, the steady decline of Austrian corpo-

rations' debt ratio over the past few years and the recent increase in the real income of Austrian households would support a continued favorable risk assessment – as would the higher growth rates forecast for the domestic economy for the years ahead.

Unchanged Exposure to Market Risk

A major part of the market risk to which banking systems are exposed stems from their trading book positions, such as their holdings of debt or equity securities and derivative instruments. Consequently, banks heavily trading for their own account must meet special regulatory capital requirements to contain the underlying market risks. Other sources of market risk for banks are interest rate risks in the banking book and foreign currency risks resulting from open foreign exchange positions.

In mid-2006, 28 Austrian banks were subject to the regulatory capital requirements for sizeable securities trading positions, of which 4 had implemented internal value-at-risk models to calculate such requirements. From a historical perspective, the share of the regulatory capital requirement to cover the trading book market risk in overall capital requirements peaked at an annual average of 6.0% in 2000. This figure subsequently dropped to 2.7% in 2001 and has since been rising steadily at a moderate rate (mid-2006: 4.1%). The relatively low level of this share reflects the fact that the Austrian banks' market risk in the trading book is

¹¹ The assessment of a decline in allowances remains unaffected by the government guarantee provided for BAWAG P.S.K. – the amount of specific allowances in relation to loans to nonbanks declines for the banking sector both with and without BAWAG P.S.K.

fairly insignificant compared with the default risk in their loan portfolios. In absolute figures, the regulatory capital requirement for trading book interest rate instruments rose from EUR 703 million to EUR 793 million in the first half of 2006, while the capital requirement for stock positions remained unchanged at roughly EUR 95 million.

Interest rate risk in the banking books declined somewhat throughout the banking sector in the first half of 2006: The asset-weighted average of the Basel ratio for the interest rate risk in the banking book¹² of banks operating in Austria dropped from 6.6% to 6.3%. Thus, this indicator has moved fairly constantly since early 2005 within a 0.5 percentage point range above the historical low of 6.1%. With regard to currencies, the interest rate risk is highest by far for euro holdings, followed by U.S. dollar holdings; all other currencies are fairly irrelevant.

The direct foreign exchange risk – i.e. the risk of valuation losses stemming from foreign exchange fluctuations – expanded only moderately at the level of the banking system in the first half of 2006: The regulatory capital requirement for outstanding foreign currency positions increased from EUR 93 million to EUR 102 million.

Payment and Securities Settlement System Security Remained High

Based on articles 44a and 82a of the Nationalbank Act, which established

the OeNB as the overseer of payment and settlement system security in Austria, 20 payment systems, 5 infrastructure providers and 15 Austrian participants in international payment systems are currently subject to oversight by the OeNB. Compared with December 31, 2005, the number of payment systems/participants overseen by the OeNB thus increased from 39 to 40.

In the first half of 2006, a total of 227.8 million transactions worth EUR 6,767 billion were routed through Austrian payment systems or handled by Austrian participants in such systems. The highest number of transactions (around 216.5 million) was processed through retail payment systems (dominated by the direct debit system Maestro POS¹³). The highest-valued transactions (approximately EUR 5,781 billion) were processed through the ARTIS/TARGET¹⁴ payment system operated by the OeNB. Securities settlement systems reported the highest growth rates in terms of both transactions (approximately +55%) and transaction values (approximately +57%) in the first half of 2006. In terms of value, Austrian banks relied most heavily on the large-value payment system EURO1, through which they routed transactions worth about EUR 563.9 billion. In terms of volume, the international retail payment system STEP2 was the single largest provider for Austrian banks, processing some 5.8 million transactions. Generally speaking, Austrian banks have been

¹² Defined as the estimated decline in the economic value of interest rate-sensitive on- and off-balance sheet positions, following a parallel shift in all currencies by 200 basis points relative to a bank's eligible capital. Non-interest rate-sensitive on-balance sheet positions whose performance banks assess on the basis of market interest rates are also included here.

¹³ POS: point of sale.

¹⁴ ARTIS: Austrian Real Time Interbank Settlement; TARGET: Trans-European Automated Real-time Gross settlement Express Transfer.

Manipulations of POS Terminals Caused No Systemic Risks

In summer 2006 a number of fraud cases involving the manipulation of point-of-sale (POS) terminals made headlines in Austria. So far unidentified individuals tampered with POS terminals to “fish” payment card information and PINs¹, and reencoded counterfeit (magnetic stripe) cards with this information. These cards were subsequently used to withdraw cash abroad, with numerous attempts failing as the providers’ security systems were triggered. None of the fraud victims suffered any financial damage.

With a view to maintaining system security, the OeNB has liaised intensively with the providers of the targeted payment system Maestro POS (operated by Europay Austria Zahlungsverkehrssysteme GmbH – Europay) and of the POS terminal network (operated by First Data Austria GmbH – FDA). Expert analyses undertaken so far have shown that the fraudulent manipulations have not created any systemic risks. Most importantly, the chip technology used for POS transactions in Austria remains safe, and the providers managed to keep the incidence of fraud low. More detailed technical analyses are still ongoing. Furthermore, the providers are intensively working towards improving and speeding up fraud detection with regard to counterfeit swipe cards, and making such manipulation impossible in the first place.

To be sure, the security levels for electronic transactions are very high in Austria in an international comparison. The most recent fraud incidents have, however, shown that like in other areas, the developers of new e-payment security standards are competing with omnipresent criminal minds. Moreover it is important to remember that payment security is an issue that cannot be solved at a national level alone; to be effective, measures need to be coordinated at a European and at a global level. The OeNB is therefore readily pursuing the issue in the relevant ESCB bodies.

¹ PIN: Personal identification number.

using the services of international payment systems more and more readily.¹⁵

In the first half of 2006, altogether 27 system disturbances¹⁶ were reported for the supervised payment and securities settlement systems (compared with 40 system disturbances reported in the first half of 2005). One incident concerned the interlinking access to TARGET, and another incident the participation of an Austrian bank in an international payment system. All other distur-

bances involved smaller infrastructure providers of retail payment systems, which typically process a mere 0.6% of all retail payments. The latter reported such incidents as server downtimes for maintenance or migration to new software systems.

Growing Exposure of Austrian Banks to Central and Eastern Europe¹⁷

Central and Eastern European countries have been continually growing in importance for the Austrian bank-

¹⁵ With 6 new participants having joined in the first half of 2006, a total of 30 Austrian institutions participated in international payment systems as at June 30, 2006 (up from 22 participants as at December 31, 2004).

¹⁶ System disturbance is defined as an interruption of the system during running times that lasts more than 30 minutes and is induced by the payment system, or as any interruption of the system that is induced by failure and occurs within the 30-minute period before the end of accounting.

¹⁷ Based primarily on the reports of condition and income Austrian banking groups have submitted on a quarterly basis since early 2002.

ing market. The period under review – end-June 2005 to end-June 2006 – saw existing foreign subsidiaries expanding their business, and domestic banks increasing direct lending¹⁸ as well as, in particular, new acquisitions. Looking ahead, the forthcoming integration of recent acquisitions like Romanian Banca Comerciala Româna (BCR) into the Erste Bank group and the planned restructuring of the UniCredit group's CEE business are going to further increase the exposure of the Austrian banking system to the area.

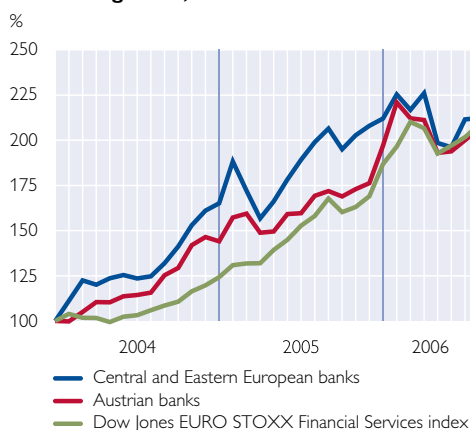
The three largest Austrian financial institutions (BA-CA, Erste Bank and Raiffeisen International) are in the top ranks of the around 20 large international banks that are active in Central and Eastern Europe, as measured by their subsidiaries' aggregated total assets. Altogether, 11 Austrian banks with 62 fully consolidated subsidiaries operated in this market at the end of June 2006. Of these, 28 subsidiaries are active in five EU Member States of the latest enlargement round¹⁹ (+2 compared with June 2005), 14 (± 0) in countries with EU acceding and accession countries²⁰ and 20 (+6) in potential EU candidate countries and other Eastern European countries²¹. These 11 Austrian banks and their subsidiaries currently hold approximately 15.3% of total banking sector assets in Cen-

tral and Eastern Europe, or as much as 22.9 % if Russia is factored out.

Another way to measure Austrian banks' integration with the pan-European financial sector is to compare the stock prices of CEE banks with the three bank stocks covered by the ATX Prime Market index²² and the Dow Jones EURO STOXX Financial Services index (see chart 21). The stronger fluctuations of stock prices of CEE banks are clearly mirrored by the three Austrian banks, if in a less pronounced way (correlation coefficient = 0.969). The same holds true for the stock market correction in mid-2006, when emerging market stocks came under pressure worldwide. While stock prices have

Chart 21

**Performance of Stock Exchange-Listed
Financial Institutions**
As at August 31, 2006



Source: Bloomberg, OeNB calculations.

¹⁸ Loans granted by Austrian banks to borrowers resident in other countries.

¹⁹ Poland (PL), Slovakia (SK), Slovenia (SI), Czech Republic (CZ) and Hungary (HU).

²⁰ Bulgaria (BG) and Romania (RO) as well as Croatia (HR).

²¹ Albania (AL), Belarus (BY), Bosnia and Herzegovina (BA), Russia (RU), Serbia (SE) and Montenegro (ME) as well as Ukraine (UA).

²² The indices were calculated on the basis of market capitalization-weighted rates. The ATX sample includes BA-CA, Erste Bank and Raiffeisen International. The CEE sample contains all Central and Eastern European banks listed at a stock exchange since 2004 (CZ(2), HR(1), HU(2), LT(3), PL(2), RO(1), SK(2)). Measured as a share of total assets, these banks covered basically 20% of the Central and Eastern European banking market (excluding RU and TR) as at December 31, 2005.

since rebounded, these figures reveal the underlying risks of the Austrian banking system's close ties with Central and Eastern Europe; however, the Dow Jones EURO STOXX Financial Services index was subject to similar, if less pronounced fluctuations.

The latest CEE business segment reports, i.e. the latest consolidated data, show that the six major Austrian banks active in the area²³ increased their total assets by 31.7% to about EUR 146 billion, thus accounting for a share of 16.7% of the Austrian banking system's consolidated total assets at end-June 2006 (June 2005: 14.0%). Corresponding pretax profits doubled to EUR 1.9 billion, driven by the EUR 684 million sale of BA-CA's Croatian subsidiary Splitska banka. Even when this special effect is factored out, the CEE business segment accounted for a share of 34.6% in the consolidated pretax profit of all Austrian banks at the end of June 2006 (June 2005: 30.2%).

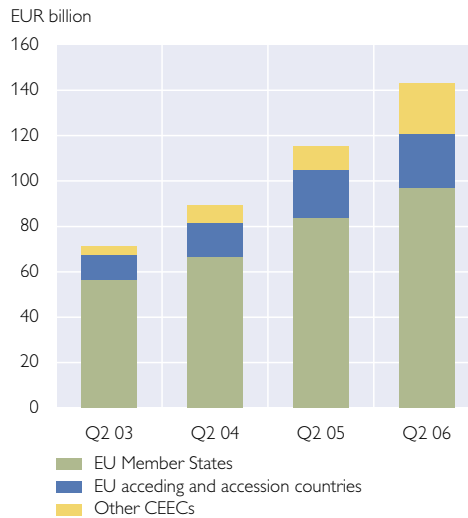
The corresponding unconsolidated data in fact tell a similar story. In the year to June 2006 the aggregated assets of all CEE subsidiaries of Austrian banks rose by EUR 27.5 billion to EUR 143.0 billion, reflecting a drop in the growth rate by 5.4 percentage points to 23.8% (see chart 22). Above all subsidiaries in CEECs other than EU member, acceding or accession countries more than doubled their asset totals compared with 2005, basically as a result of acquisition sprees in the area.

Chart 22

Total Assets of Austrian Banks'

CEE Subsidiaries

As at June 30, 2006



Source: OeNB.

Aggregated operating profits of CEE subsidiary banks mirror this pattern: On balance, operating profit rose by 35.7% to about EUR 1.6 billion, which corresponds to a growth rate 1.0 percentage point higher than in the previous year. Here, too, subsidiaries in "Other CEECs" posted higher growth rates at +94.2% than subsidiaries based in EU Member States (+28.3%) or EU acceding and accession countries (+21.8%) (see chart 23).

The cost/income ratio²⁴ of fully consolidated subsidiary banks in the CEECs improved from 56.4% at the end of June 2005 to 54.2% at the end of June 2006; this rise is attributable to a sharper increase in operating income (+29.7%) than in operating expenses (+23.9%).

²³ Bank Austria Creditanstalt AG (BA-CA), Erste Bank der oesterreichischen Sparkassen AG (Erste Bank), Raiffeisen Zentralbank Österreich AG (RZB), Bank für Arbeit und Wirtschaft und Österreichische Postsparkasse AG (BAWAG P.S.K.) and Österreichische Volksbanken AG (ÖVAG).

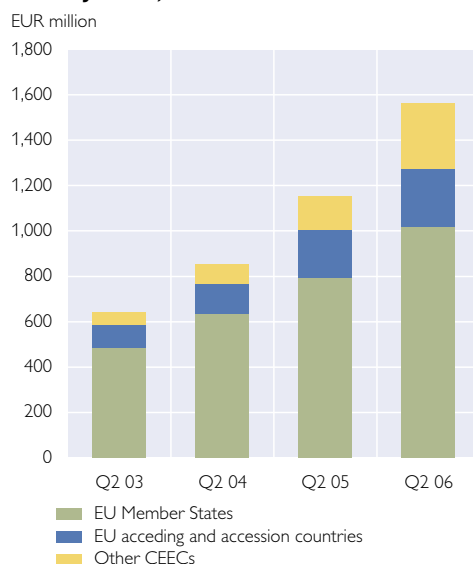
²⁴ Ratio of administrative costs to operating income before deduction of net risk provisioning in the lending business.

Chart 23

Operating Profits of Austrian Banks'

CEE Subsidiaries

As at June 30, 2006



Source: OeNB.

Similarly, the credit exposure of Austrian banks to CEECs shows the dynamic growth and the prominent role of the new EU Member States (see chart 24). Of the direct lending volume of EUR 30.5 billion outstanding at the end of June 2006, 59.4% are attributable to the new EU Member States, 24.9% to EU acceding and accession countries and 15.8% to other CEECs. Indirect loans developed along similar lines. Here, the new EU countries accounted for 68.4%, the EU acceding and accession countries for 15.8% and the other CEECs likewise for 15.8%.

All in all, Austrian banks continue to focus their CEE activities on the new EU Member States. Subsidiaries in the area accounted for 67.9% of all Austrian CEE subsidiaries' total assets at the end of June 2006. This EU bias is clearly a buffer against risks posed by institutional, legal and, thus, economic conditions in those markets. Bulgaria and Romania – which will join the EU on January 1, 2007 – plus

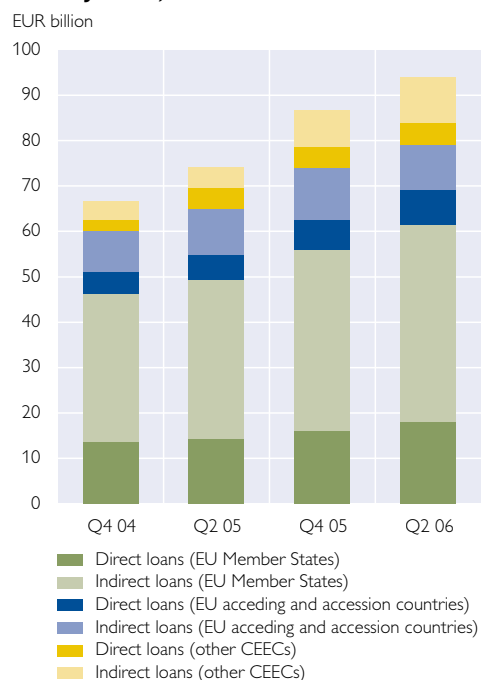
Croatia accounted for another 16.4% of CEE subsidiaries' total assets. In other words, the current exposure figures as well as the second quarter reports, which do not yet reflect the acquisition of Romanian Banca Comerciala Româna by Erste Bank, in fact overstate institutional and legal risks. At the same time, business in the other CEECs, whose share in assets has meanwhile grown to 15.7%, has been expanding more dynamically (see chart 25, left panel).

The EU bias will be softened through acquisitions in Eastern and Southeastern Europe that may be in the pipeline. Likewise, the planned restructuring within the UniCredit group will lead to a shift away from the EU area. BA-CA has sold its Polish subsidiary to its parent UniCredit, but will in turn become responsible for the Central and Eastern European

Chart 24

Credit Exposure to Central and Eastern European Countries

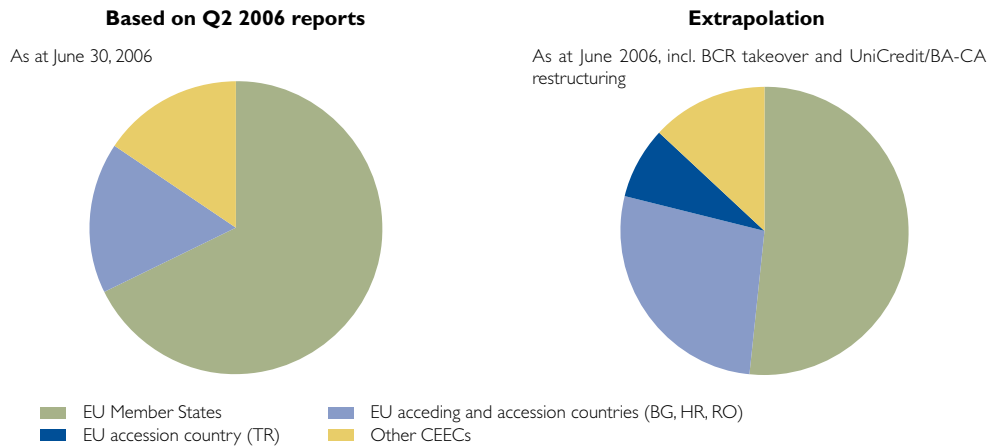
As at June 30, 2006



Source: OeNB.

Chart 25

Total Assets of Austrian Banks' CEE Subsidiaries



Source: OeNB, BankScope, OeNB calculations.

subsidiaries of UniCredit²⁵ as well as for HVB's business in the Baltic states. In addition, there are plans for BA-CA to take over the 50% stake in Turkish Koç Bank, a joint venture of UniCredit. In other words, BA-CA is going to venture into new and as yet fairly uncharted markets that are fairly big as a share of aggregate assets (see chart 25, right panel).

Judging from the market sentiment, as reflected in bank ratings, on the underlying risk position of individual banking markets in general or Austrian subsidiaries in particular (see table 5), the outlook is stable or slightly positive. The risk positions of all Austrian subsidiaries match national averages.

Stress tests simulating the effects of extreme shocks to the Austrian banking system are a tool for quantifying the significance of the CEE banking markets for Austria. In the past, the OeNB conducted these stress tests on the general assumption that the share of nonperforming loans

(NPL), as derived from past fluctuations, was going to rise by 40%.²⁶ On this assumption, the consolidated capital ratio of the Austrian banking system for the first half of 2006 would have dropped by 26 basis points.

Given that in a budding growth market, past fluctuations may not be a very sound indication of future credit risk, a significantly more stringent scenario has recently been used for CEE-related stress tests in order to determine the resilience of the Austrian banking system to an extreme deterioration of foreign subsidiaries' loan quality.

As some banks have relatively low NPL ratios (NPL as a share of all loans to nonbanks), the CEE scenario has now been adjusted to reflect the higher of (1) the relative increase or (2) the absolute increase of the NPL ratio. The strength of the shock varies in line with the underlying country risk, ranging from low (relative increase of the NPL ratio by 50% or absolute increase by 6 percentage

²⁵ Bulbank (BG), Živnostenská banka (CZ), Zagrebačka banka (HR), UniCredit Romania (RO), IMB (RU) and UniBanka (SK).

²⁶ The calculation of the stress test scenario is based on allowances for bad loans as reported by banks and on the assumption that such allowances had to be established for 50% of all nonperforming loans.

Table 5

**Average Ratings of CEE Banking Systems
and Selected Austrian Banks' CEE Subsidiaries¹**

As at September 30, 2006

Country	Bank	Deposit rating – LT ²	BFS rating ³	Outlook
Bulgaria		Ba2	D–	positive/stable
Croatia		Ba1	D+	positive/stable
	<i>Zagrebačka banka</i>	<i>Ba1</i>	<i>D+</i>	<i>positive</i>
Poland		A2	C–	stable
	Bank BPH	A3	C–	developing ⁴
Romania		Ba2	D–	positive
	Banca Comerciala Romana	Ba2	D–	under review ⁵
	Raiffeisen Bank	Ba2	D–	under review ⁵
Russia		Ba1	D–	stable
	Impexbank	Baa2	E+	positive
	ZAO Raiffeisenbank Austria	Baa2	D	stable
Slovak Republic		A2	D+	positive
	Slovenská sporiteľňa	A2	D+	stable
	Tatra banka	A3	C–	stable
	UniBanka	A2	D	stable
Slovenia		A2	C	stable
Czech Republic		A1	C	stable/positive
	Česka spořitelna	A2	C	stable
	Živnostenská banka	A2	D	stable
Turkey		B1	D	stable
	Koçbank	B1	D	negative
	Yapı ve Kredi Bankası	B1	E+	positive
Ukraine		B2	E+	stable
	Raiffeisen Bank Aval	B2	D–	stable
Hungary		A1	C	Stabil
	Erste Bank Hungary	A2	D	under review ⁵

Source: Moody's Investors Service.

¹ Italics indicate banks that are expected to become subsidiaries through new acquisitions or the forthcoming restructuring of the UniCredit group.

² LT = Long-term: Long-term deposits are rated on a scale from Aaa, Aa, A, Baa, ... to C.

³ BFS = Bank financial strength, rated on a scale from A, B+, B, B–, ... to D– and E.

⁴ Bank BPH's rating may come under pressure given uncertainty surrounding its merger with Bank Pekao.

⁵ May be upgraded.

points) to medium (relative increase of the NPL ratio by 75% or absolute increase by 8 percentage points) to high (relative increase of the NPL ratio by 100% or absolute increase by 10 percentage points). The different risk buckets reflect above all the notion that EU membership reduces the risk exposure of individual countries. The severity of this scenario is highlighted by the fact that the current NPL volume more than doubles for more than 40% of all subsidiaries.

Under the assumptions of this more stringent scenario, the capital

ratio is found to decrease by 79 basis points rather than 26 basis points, causing the consolidated capital ratio of the banking system to drop from 12.4% to 11.6% at the end of the second quarter of 2006. In other words, the capital ratio remains safely above the statutory 8% threshold, and the Austrian banking sector is well poised to withstand the assumed extreme shock. Moreover, the good income situation of Austrian subsidiaries in Central and Eastern Europe serves as an additional buffer that may absorb adverse developments.

CEE Banking Sector Remains Stable despite Strong Credit Growth

Amid continued favorable macroeconomic conditions, credit to private nonbanks in the second quarter of 2006 exceeded the level recorded one year earlier by 15% to 25% (adjusted for inflation) in the Czech Republic, Hungary, Slovenia, Slovakia and Croatia; in Romania it was even 40% higher. Poland and Bulgaria recorded real credit growth rates of 11% and 8%, respectively. The vigorous lending activities are also reflected in the ratio of the increase in outstanding credit to GDP¹, which was higher in all these countries with the exception of Bulgaria. This development has increasingly raised concerns about potential macroeconomic imbalances and financial instability. The countries concerned have become more and more dependent on capital inflows from abroad, and the high credit growth rates may be related to substantial external imbalances and rising inflation rates in several countries; in addition, credit risks may also be on the rise. In this context, Bulgaria stands out positively from the other CEECs: the monetary and prudential measures implemented over the past three years have contributed to slowing down domestic lending dynamics to a considerable extent recently. Although the external debt of domestic corporations (including nonbank financial institutions), in particular the amount of cross-border intercompany loans, has expanded notably, the growth of total (domestic and cross-border) loans outstanding to private nonbanks has clearly been on the decline. In Romania and Croatia, by contrast, the measures launched by the central banks so far have not had the full desired effect.

Furthermore, in a number of CEECs, the share of domestic foreign currency loans is high, which can be seen as problematic, as interest rates in the euro area and in Switzerland (the bulk of these loans is denominated in euro and Swiss francs) have been rising and several countries of the region experienced increased exchange rate volatility in the first half of 2006. A higher debt-service burden in local currencies due to increased interest rates and exchange rate losses suffered by debtors who have not hedged their exposures against exchange rate volatilities may impact negatively on banking sector stability. As a result, borrowers may on the one hand become unable to service their debt or, on the other hand, households and enterprises that continue to be able to do so may cut back expenditures in other areas, thus contributing to a slowdown in economic growth and, subsequently, a growing number of nonperforming loans. In the first half of 2006, the share of domestic foreign currency loans soared particularly in Hungary and Slovenia. In Hungary, the risk entailed in foreign currency lending is further aggravated by the local currency's susceptibility to exchange rate volatility caused by a high dependence on foreign capital inflows, which may, however, be reduced by sustainable and credible fiscal consolidation. Also, supervisors in Hungary are making efforts to increase banks' and borrowers' risk awareness and seem to be considering measures to put a damper on the foreign currency lending boom. As a first step, a recommendation for banks on better credit risk management was issued. In Slovenia, by contrast, where banks' foreign currency portfolios are overwhelmingly denominated in euro, the imminent introduction of the euro has had a significant risk-mitigating effect. The share of domestic foreign currency loans continues to be high but is on the decline in Bulgaria and Romania owing to central bank measures, which in the case of Bulgaria were directed at credit growth in general and in the case of Romania primarily targeted foreign currency lending. In the latter country, the share of domestic foreign currency loans has declined sharply despite banks' efforts to circumvent these central bank measures (e.g. some increased their capital stock to shrink the share of foreign currency loans in equity capital), which have been confirmed by anecdotal evidence. In Poland, where domestic foreign currency lending plays a far smaller albeit somewhat increasing role, supervisors have recommended to banks to minimize risks by improving risk management systems and stepping up customer information on exchange rate risk. In addition, there have been talks with banking sector representatives about stricter prudential rules. The Croatian central bank has obliged banks to assign higher risk weights and apply more comprehensive reporting requirements to foreign currency loans taken out by unhedged borrowers. Moreover, it issued guidelines for banks on better foreign exchange risk management in connection with domestic foreign currency loans.

¹ Measured as the share of nominal change in outstanding loans compared with the same quarter of the previous year in percent of GDP of the respective four quarters.

The profitability of the CEE banking sectors has remained stable at a generally high level in the first half of 2006. Only in Romania, where operating income was slightly down (mainly due to net interest income), did the nominal return on equity decrease noticeably compared with the same period of 2005, whereas it improved markedly in Poland (thanks to higher net income from interest as well as fees and commissions and improved cost management). Owing to the continued expansion of lending to households and corporations, capital adequacy ratios, though remaining at double-digit levels, fell throughout the region. The drop in the share of nonperforming loans (as a percentage of the total loan portfolio) in all CEECs (except for Romania) may have also been traceable to strong loan growth. This may change in future, however, as portfolios will be maturing and/or the pace of lending growth could be slowing down, in particular as the amount of nonperforming and watch loans increased considerably in several countries. Furthermore, it cannot be ruled out that in accessing a broader customer base, banks eased their credit standards or failed to adequately adapt risk management to the new conditions. Finally, it should be noted that so far, the banking business in CEE has benefited from an overall friendly macroeconomic environment (with the exception of Poland in the early years of the decade); thus, the resilience of the banking sectors against a pronounced economic downturn or a less favorable financial climate has largely not been tested as yet. (Stress tests conducted by national central banks recently showed that stress resilience was on the whole satisfactory, but – in part – declining.)

Nominal Return on Equity (after Tax)

	%					
	2002	2003	2004	2005	H1 05	H1 06
Bulgaria	14.6	14.8	16.6	18.4	18.6	18.1
Croatia	13.7	14.5	16.1	15.6	14.5	14.7
Poland	5.3	5.5	17.4	20.0	21.2	28.0
Romania	21.0	17.7	17.7	15.1	19.7	14.2
Slovak Republic	11.5	10.5	12.3	13.4	14.6	16.4
Slovenia	8.5	8.2	8.7	11.1
Czech Republic	27.1	23.4	23.1	49.9	29.3	24.8
Hungary	16.1	18.7	23.8	23.2	27.3	23.2

Net Interest Income

	% of annual average bank assets					
	2002	2003	2004	2005	H1 05	H1 06
Bulgaria	3.9	4.7	4.9	4.5	4.4	4.3
Croatia	3.3	3.3	3.0	2.9	3.0	2.8
Poland	3.4	3.1	3.2	3.1	3.1	3.1
Romania	3.4	4.7	4.8	3.5	3.7	3.2
Slovak Republic	2.7	2.9	2.9	2.2	2.2	2.2
Slovenia	3.7	3.2	2.8	2.5	2.7	..
Czech Republic	2.4	2.1	2.3	2.2	2.3	2.2
Hungary	4.3	4.0	4.3	4.1	3.9	3.7

Operating Costs

% of annual average bank assets

	2002	2003	2004	2005	H1 05	H1 06
Bulgaria	4.5	4.5	4.2	3.6	3.5	3.5
Croatia	2.7	2.6	2.3	2.2	2.2	2.1
Poland	4.1	3.9	3.7	3.7	3.7	3.5
Romania	6.6	6.9	6.1	5.4	5.3	5.0
Slovak Republic	2.5	2.6	2.4	2.1	2.1	2.0
Slovenia	3.2	2.9	2.7	2.5	2.4	..
Czech Republic	1.9	1.9	1.9	1.8	1.8	1.7
Hungary	3.8	3.4	3.3	3.1	2.8	2.6

Net Change in Loan Loss Provisions

% of annual average bank assets

	2002	2003	2004	2005	H1 05	H1 06
Bulgaria	0.1	0.3	0.7	0.8	0.9	0.4
Croatia	0.3	0.3	0.3	0.2	0.2	0.2
Poland	1.5	0.9	0.4	0.2	0.3	0.2
Romania	0.2	0.6	0.7	0.5	0.2	0.3
Slovak Republic	-0.4	-0.5	0.2	-0.1	0.0	0.1
Slovenia	1.1	0.8	0.7	0.7	0.8	..
Czech Republic	0.3	0.0	0.4	0.5	0.3	0.4
Hungary	0.3	0.3	0.5	0.3	0.1	0.4

Nonperforming Loans

% of total loans

	2002	2003	2004	2005	H1 05	H1 06
Bulgaria	3.6	4.2	3.6	2.8	2.8	2.7
Croatia	5.9	5.1	4.6	4.0	4.3	3.6
Poland ¹	21.1	21.2	14.7	11.0	13.2	9.4
Romania	2.3	8.3	8.1	8.3	8.2	8.4
Slovak Republic	11.0	9.1	7.0	5.5	6.9	..
Slovenia	7.0	6.5	5.5	4.7	5.3	..
Czech Republic	8.5	5.0	4.1	4.0	4.3	3.8
Hungary	3.1	2.7	2.7	2.5	2.6	2.4

¹ For Poland, nonperforming loans also include "irregular claims."

Source: National central banks.

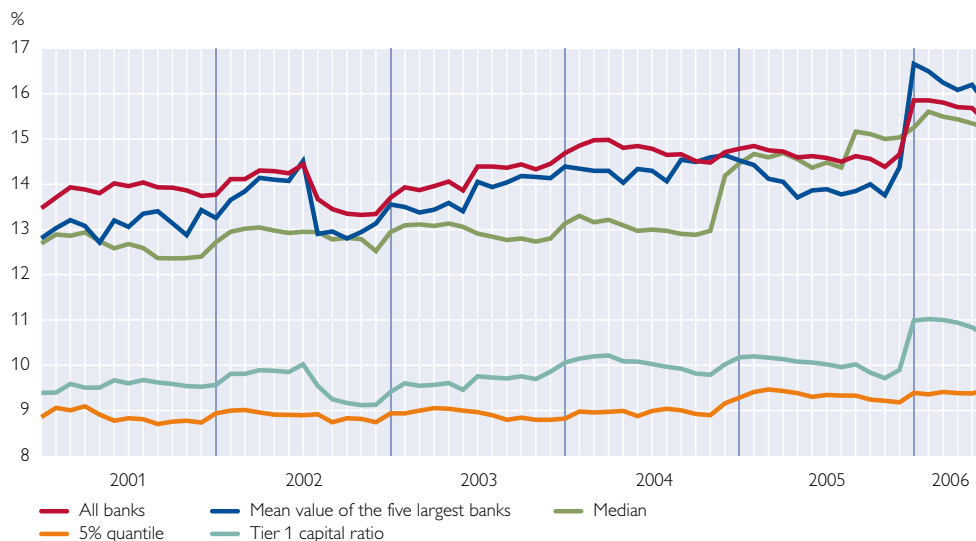
Note: Data are not comparable between countries. Intra-year data are annualized linearly.

Austrian Banks' Capital Ratios Remained High

Banks' solvency as measured by the capital ratio, i.e. a bank's own funds in relation to risk-weighted assets, are an essential indicator for assessing the Austrian banking sector's risk-bearing capacity. Both by historical and European standards, Austrian banks'

capital adequacy has traditionally been at high levels over recent years, and in the first half of 2006, the unconsolidated capital ratio of the Austrian banking sector reached a new high, averaging 15.9% in January and February (see chart 26). Even though it had declined moderately to 15.4% by mid-year, it still remained at a very

Austrian Banks' Unconsolidated Capital Ratio



Source: OeNB.

high level compared with the levels observed over the past few years. Similar to the unconsolidated value, the consolidated capital ratio of all Austrian banks stood at a remarkable 12.4% by mid-2006.

Hence, the Austrian banking sector has maintained a comfortable capital cushion, ensuring that credit institutions are generally highly resilient to financial stress or crisis. Yet, the overall current capital ratio is very much influenced by one single bank, or, put more precisely, the acquisition-driven capital increase by Erste Bank. The capital ratio of the five largest (in terms of total assets) domestic banks has therefore increased particularly strongly, reaching 16.7% on an unconsolidated basis at the beginning of 2006 and a still remarkable 15.8% in June 2006. As mentioned earlier, this development is to a considerable extent attributable to the acquisition-driven capital increase by Erste Bank. Since the ac-

quisition can be expected to be entered into the books by Erste Bank in the course of 2006, Austrian banks' aggregate capital adequacy is likely to move back to a somewhat lower level toward year-end. The analysis of the major banks shows that their current capital levels are necessary, in particular, to be prepared for potential future acquisitions. Compared with other euro area banks, the consolidated capital ratio of the major Austrian banks at present corresponds to the euro area average.²⁷

The tier 1 capital ratio, i.e. core capital in relation to the assessment base, climbed to a peak of an average 11% (on an unconsolidated basis) in January 2006 and remained high at 10.7% in June 2006.

All in all, Austrian banks currently have large capital cushions, which enable them to carry out acquisitions without jeopardizing the risk-bearing capacity of the Austrian banking sector.

²⁷ This value (11.3%) refers to the capital ratio of a representative sample of major euro area banks as given in the ECB's Financial Stability Review 2006.

Sufficient Credit Risk Cover Confirms Austrian Banking Sectors' Satisfactory Shock Resilience

The following section presents the results of stress tests based on a Monte Carlo simulation of the Austrian banking sector's network model developed under the Systemic Risk Monitor (SRM) project.²⁸ Contrary to the sensitivity stress tests presented in previous Financial Stability Reports, which involved only the calculation of the loss resulting from changes in one particular risk factor with all other factors assumed to remain constant, these stress tests calculate the entire loss distribution given the change of one risk factor. In the simulation, all other risk factors are drawn from the conditional common distribution of all risk factors corresponding to the crisis scenario.

Table 6 presents selected results of such stress tests for the end of the first half of 2006 and the results of a simulation reflecting the current situation without a crisis scenario. The results of the kind of sensitivity stress tests presented in previous issues of the Financial Stability Report were also calculated on the basis of the data stemming from end-June 2006. In qualitative terms, these results are similar to those of previous half-year periods, but due to space constraints, they are not shown here.²⁹ These stress tests and the SRM stress tests based on a Monte Carlo simulation shown in table 6 therefore confirm

that the Austrian banking sector's resilience to shock remains satisfactory.

The results summarized in table 6 are presented in a way different from that of previous Financial Stability Report issues, which used to show the effect of sensitivity stress tests on the capital adequacy ratio. Here, the table displays the mean value and the 95% quantile of the loss distribution over the third quarter of 2006 resulting from credit, market and contagion risk in the Austrian interbank market as well as the sum of these three risk categories, i.e. total risk, relative to eligible capital. Existing risk provisions were deducted from the calculated losses; with respect to credit risk, they consist of provisions for claims on domestic and foreign nonbanks as well as foreign banks and, in the case of contagion risk, provisions for claims on domestic banks. Gains or losses from market risk are shown relative to eligible capital without deducting provisions. Consequently, the total risk figures show the loss from all risk categories minus total credit risk provisions relative to eligible capital.

The simulation reflecting the current situation, i.e. not involving a crisis scenario, yields a mean value of -3.25% for total risk, which means that the existing risk provisions for claims on banks and nonbanks exceed the expected loss from all three risk categories by 3.25% of eligible capital. The maximum loss occurring

²⁸ For details on the methodology which provides the basis for the SRM see: Boss, M., G. Krenn, C. Pühr and M. Summer. 2006. *Systemic Risk Monitor: A Model for Systemic Risk Analysis and Stress Testing of Banking Systems*. In: OeNB. *Financial Stability Report 11*. 83–95.

²⁹ In particular, the stress test for the indirect credit risk of foreign currency loans yielded a decline by 0.28 percentage point (for Swiss franc-denominated loans) and by 0.04 percentage point (for Japanese yen-denominated loans), respectively. As regards the credit exposure in CEECs, a new scenario was devised. The results are presented in the chapter "Robust International Economy Fuels Recovery of Financial Markets Following Corrections in Spring."

Table 6

**Results of Selected SRM Stress Tests on the Basis of
Monte Carlo Simulations for End-June 2006**

%

	Total risk		Market risk		Credit risk		Contagion risk	
	mean value	95% quantile	mean value	95% quantile	mean value	95% quantile	mean value	95% quantile
Current situation	-3.25	0.28	-0.42	2.24	-2.89	-1.05	0.05	0.81
Doubling of domestic probabilities of default	-2.24	1.38	-0.34	2.36	-2.00	-0.23	0.10	0.81
Increase of euro interest rates by 120 basis points	-0.26	2.76	2.54	4.58	-2.89	-1.10	0.09	0.81
Appreciation of the euro by 10%	-3.98	0.04	-1.12	2.21	-2.90	-1.09	0.04	0.81
Depreciation of the euro by 10%	-2.57	1.45	0.26	3.71	-2.89	-1.05	0.06	0.81

Source: OeNB.

Note: The figures represent the mean value and the 95% quantile of the loss distribution corresponding to the respective risk category over the third quarter of 2006 relative to eligible capital. Provisions for claims on domestic and foreign nonbanks and foreign banks were deducted from credit risk loss; provisions for claims on domestic banks were deducted from the loss from contagion risk in the Austrian interbank market (which corresponds to credit risk vis-à-vis domestic banks). Accordingly, provisions for all claims were deducted from the loss from total risk.

with a probability of 95%, i.e. the 95% quantile, exceeds the existing risk provisions by 0.28% of eligible capital. This result is mainly traceable to market risk, for which the calculations yielded a gain of 0.42% in the mean value, but a loss of 2.24% of eligible capital in the 95% quantile. At 1.05% of eligible capital, the maximum loss from credit risk which occurs with a probability of 95% is still sufficiently covered by existing risk provisions. The stress test for contagion risk, which relates to credit risk in the Austrian interbank market, yields positive values – albeit they are very low relative to eligible assets – in both the mean (0.05%) and the 95% quantile (0.81%).

Similarly, in none of the stress scenarios displayed in table 6, the mean total loss exceeds the existing credit risk provisions. Even if the domestic probabilities of default were assumed to double, the expected loss from credit risk would be lower than the existing risk provisions (by an amount of 2% of eligible capital). For total risk, factoring in all risk categories, the stress test yields a loss of 1.38% of eligible capital in the 95%

quantile, but here it must be borne in mind that this value relates to the maximum loss occurring with a probability of 95% given the doubling of the probabilities of domestic default; in other words, this corresponds to a crisis in addition to the underlying crisis scenario. Regarding market risks, like in the past, increasing interest rates in the euro area are observed to have the largest impact. The expected loss from market risk following a parallel upward shift in the yield curve of the euro by 120 basis points comes to 2.54% of eligible capital. As regards exchange rate risk, an appreciation of the euro would result in a 1.12% gain in the mean for the entire Austrian banking system; conversely, a depreciation would bring about a mean loss of 0.26% of eligible assets.

All in all, the SRM stress tests carried out on the basis of Monte Carlo simulations for end-June 2006 confirm that the shock resilience of the Austrian banking system as a whole has remained satisfactory. This finding is underpinned by credit risk provisions which are considered to be sufficient in their entirety. This con-

clusion, however, is subject to the qualification that the loss distributions calculated on the basis of SRM relate to one quarter, whereas risk provisions tend to be made for longer periods. In any case, the results of the stress tests described here do not allow any conclusions about individual banks, for which certain stress scenarios may very well bring about higher losses relative to eligible capital.

Stabilization of Major Austrian Banks' Ratings

Financial stability analysis may involve not only the consideration of supervisory reporting but also stock exchange valuations and publicly available information in the form of indicators of international rating agencies such as Moody's. These indicators include long-term deposit ratings and the so-called bank financial strength (BFS) rating.

After the developments in the Austrian banking sector in the fourth quarter of 2005 and the first quarter of 2006 sparked some changes in

the ratings of the credit institutions involved,³⁰ Moody's has not changed its ratings since end-May 2006 (see table 7). In particular, BAWAG P.S.K.'s rating has stabilized, and the sale process has been initiated. Some uncertainty remains, however, as to whether the downgrading of Hypo-Alpe-Adria Bank's financial strength from C+ to D- can be considered to be final, as the review process that might result in another downgrading is still under way. The second rating which Moody's considers not to be stable is BA-CA's financial strength. Originally, Moody's had argued that it was not clear which part of the banking group the lucrative CEE business would be assigned to after BA-CA's parent bank HVB had been taken over by UniCredit. Still, Moody's did not change the negative outlook even after it became public that the CEE activities would be regarded as part of BA-CA's business, reasoning³¹ that there was continued uncertainty about the complex integration of UniCredit's subsidiaries into BA-CA.

Table 7

Ratings of Selected Major Austrian Banks

As at September 30, 2006

	Deposit rating		BFS rating	
	LT	outlook		outlook
BA-CA	A2	stable	B-	negative
Erste Bank	A1	stable	C+	stable
RZB	A1	stable	C+	stable
BAWAG P.S.K.	A3	stable	E+	stable
ÖVAG	A2	stable	C	stable
Hypo Alpe-Adria Bank	Aa2	stable	D-	under review

Source: Moody's Investors Service.

Note: LT = Long-term; BFS = bank financial strength.

³⁰ As reported in the latest Financial Stability Report, between January and May 2006, Moody's gradually downgraded BAWAG P.S.K.'s BFS rating from C+ to E+. The long-term deposit rating was downgraded from A2 to A3 in March 2006. The downgrading of Hypo Alpe-Adria Bank's BFS rating was also reported.

³¹ Except for the bank's business in Poland; see also the section on the activities of Austrian banks in Central and Eastern Europe in this issue of the Financial Stability Report.

Austrian Major Banks' Stock Prices Showed Volatility

The fact that large exposures in CEE do not only have a positive impact on the market valuation of the three Austrian banks listed in the ATX Prime (BA-CA, Erste Bank and Raiffeisen International) also became obvious in early summer 2006, when emerging markets stocks came under pressure worldwide. The turmoil seen between mid-May and mid-June affected almost all stocks listed in the ATX Prime and resulted in stock price losses of some 20%.³² On the bright side, it should be noted that at EUR 42.7 billion as at September 30, 2006, the market capitalization of the three listed banks continued to be significantly above the level recorded in the same month of the previous year (EUR 32.4 billion)³³ and that relative to the entire ATX Prime, there has been a considerably stronger consolidation of these banks' stock prices since mid-June. As a consequence, the share of these stocks in the ATX Prime's total market capitalization increased to 36.1% in the third quarter of 2006.

The stock market turbulence caused by doubts about the sustainability of economic developments in the CEE emerging markets of early summer 2006 was also reflected in the increased implied volatility of at-the-money call options on the ATX.³⁴ The listed Austrian banks in particular experienced a significantly higher increase of implied volatilities than the Dow Jones EURO STOXX Fi-

ancial Services Index. As 2006 progressed, however, the implied volatilities of both the bank stocks in the ATX and the index itself abated notably.

Insurance Companies Benefit from CEE Business

Insurers in Good Shape

Continuing the positive trend of recent years, the European insurance sector fared well in the first half of 2006. Life insurance contracts increased strongly in most European countries, and unlike in 2005, claims payments made by reinsurers were not affected by major claims in the first six months of 2006. The capital market environment remained benign and improved the profitability and stability of European insurance companies. The stock market downturns in May and June 2006 apparently had no sustained negative impact on insurers' investment results, since stock prices picked up markedly over the summer. The bond markets have also turned bullish recently.

The Austrian insurance industry continued to improve its business and earnings performance. On the back of the increasing popularity of state-subsidized personal pension plans, the life insurance segment made a considerable contribution to the improvement in operating business. Profitability was up despite higher snow and flood claim payments, mostly thanks to better investment results and improved cost management. Business in CEE continued at a buoyant pace, providing a substantial

³² By comparison, the Dow Jones EURO STOXX 50 lost merely some 13% over the same period.

³³ Note: The rise comprises a capital increase of around EUR 2.8 billion by Erste Bank in January 2006. In addition, at the end of the third quarter of 2005, Investkredit was still listed in the ATX Prime. But since Investkredit was taken over by ÖVAG, the bank was delisted at the end of 2005 and has not been considered in this analysis for reasons of data comparability.

³⁴ Source: Datastream, Bloomberg.

contribution to the rise in the major Austrian insurers' operating results. At the end of the third quarter of 2006, the rating outlook for the largest domestic insurance companies was stable. The stock prices of the insurance companies listed on the Prime Market of the Vienna stock exchange slumped as the financial markets witnessed some turbulence in May and June 2006 but picked up again as the year progressed.

Risks to the future outlook for the insurance sector include the historically low interest rates, premiums that are not risk-adequate due to the competitive situation and the increasing occurrence of major claims events. Furthermore, insurers are faced with challenges like the first-time application of the International Financial Reporting Standards (IFRS), the debate on the new IFRS "Insurance Contracts" as well as the preparations for Solvency 2 (the EU project aimed at revising existing solvency regulations). The ultimate objectives of both IFRS and Solvency 2 are to increase transparency, step up risk management and promote market discipline in the insurance sector and thus foster stability.

In the first half of 2006, the Austrian insurance companies' total assets³⁵ expanded by EUR 3.6 billion or 4.7% to EUR 80.3 billion; the annual growth rate stood at 9.4% at the end of June. Since the beginning of 2006, asset growth has been mainly attributable to a 5.9% (EUR 1.6 billion) increase in debt securities, which was driven by investment in foreign debt securities (+6.1% or +EUR 1.1 billion in the first half of 2006). Fur-

thermore, deposits with domestic banks other than overnight deposits (+EUR 0.7 billion or +54.7%), domestic equities and other domestic securities (+EUR 0.6 billion or +2.7%) as well as other assets (+EUR 1.4 billion or +37.8%) supported asset growth. On the asset side, only loans to the government (–EUR 1.0 billion or –26%) and investment in real estate (–EUR 0.2 billion or –5.2%) posted a sizeable decline. The Austrian insurance industry's increasing inclination to invest abroad, which has been observable for several years, helps diversify investment risk geographically. At the end of the first half of 2006, the share of foreign assets in total assets came to 32.7%.

At 10.1%, the insurance sector's total exposure toward domestic credit institutions rose more markedly in relative terms than total assets, amounting to EUR 11.6 billion (14.5% of total assets) at the end of June 2006. The higher exposure was mainly traceable to the significant rise in deposits with domestic banks other than overnight deposits. An over-the-year analysis of the exposure reveals that at EUR 0.4 billion as at end-June 2006, loans to domestic credit institutions almost doubled, reaching their highest level since 1997. The share of insurance companies' investments with domestic credit institutions in Austrian banks' consolidated total assets remained unchanged at roughly 1.3%. Thanks to the insurance sector's business and profit performance and its modest exposure to the banking sector, the risk of contagion between these two sectors continues to be low.

³⁵ Excluding reinsurance business; based on quarterly reports (OeNB insurance statistics).

Austrian Insurance Companies' Activities in CEE

Like Austrian banks, domestic insurance companies entered the CEE market earlier than their foreign competitors. The CEE markets have played an increasingly important role for the Austrian insurance sector, accounting for a rising share in its exposure and large profit contributions. According to six large Austrian insurers¹, the CEE share in total premiums received came to some 21% at the end of 2005; some insurers even reported a share of over 30%. Thanks to high premium growth in these markets, this share has been expanding fast; nevertheless, Austria remains the most important market for domestic insurance companies. With insurance penetration and density at low levels (as regards both life and non-life insurances), growth rates in the CEE markets can be assumed to remain above those seen in traditional markets for quite some time to come; furthermore, the CEE markets still offer favorable cost structures. For these reasons, enhancing their market presence in the region seems particularly attractive for Austrian insurance companies. Like in Austria, life insurers in CEE also benefit from the increasing importance of individual old-age financial provisioning; the share of unit-linked insurance products has been expanding particularly strongly. Since life insurance policies are also used as collateral for household loans, high loan growth indirectly contributes to life insurance growth.

The developments show that the Austrian insurance sector has benefited from the integration of the CEE markets. However, close risk monitoring is vital for insurers especially when doing business in non-EU countries, since these markets involve higher legal, institutional and thus economic risks.

¹ Generali Holding Vienna AG, Grazer Wechselseitige Versicherung AG, Sparkassen Versicherung AG, Uniqa Versicherung AG, Wiener Städtische Versicherung AG, Wüstenrot Versicherungs-AG.

Pension Funds Suffer Capital Losses

In the second quarter of 2006, a total of 20 single- and multi-employer occupational pension funds were operating in Austria. One occupational pension fund was closed down in the first quarter of 2006. Despite regular contributions, their aggregated total assets shrank by 2.6% from EUR 11.9 billion to EUR 11.6 billion in the second quarter of 2006. Some 94% of total assets were held in mutual fund shares, which means that the bulk of investment is outsourced. The share of foreign currency investments was below 3%.

The number of persons eligible for pension fund benefits came to 440,000 at end-2005, with around 77% being members of defined con-

tribution schemes and approximately 23% of defined benefits schemes.³⁶ In the second quarter of 2006, euro-denominated bonds accounted for some 56% of pension funds' investments, euro area stocks for around 22% and non-euro area stocks for approximately 17%. Non-euro-denominated bonds and real estate made up almost 5% of pension funds' investments. In the first half of 2006, Austrian pension funds posted an average loss of 1.20% of the invested capital in nominal terms before costs (asset management costs, custodian fees and, if applicable, minimum return guarantees, etc.).³⁷

By international standards, Austrian pension funds are relatively small; this is not true, however, for

³⁶ Source: Fachverband der Pensionskassen (Austrian occupational pension fund association).

³⁷ Source: Oesterreichische Kontrollbank.

funded pension schemes in general. Under its Global Pension Statistics Project, the OECD published comparative data for 2004 in 2006.³⁸ In three countries, total investments of pension funds amount to more than 100%, in 15 countries to less than 10% of the respective country's GDP. Posting a share of 4.5%, Austria takes

the 22nd place in this ranking. Austria ranks higher (15th) when the investments of life insurances, which are significantly more common in Austria, are taken into account: aggregate pension funds and life insurance assets in Austria equal around 25% of GDP.

³⁸ Source: *OECD Financial Market Trends 90* (April 2006).

S P E C I A L T O P I C S

Booming, but Risky: The Ukrainian Banking Sector – Hot Spot for Foreign Strategic Investors

Stephan Barisitz¹

This paper gives an overview and assessment of the evolution of the Ukrainian banking sector since the outset of transition, focusing on the most recent developments. While the 1990s saw turbulent changes against the backdrop of continuous economic contraction, the Ukrainian banking sector has been on a strong expansion path ever since the turn of the millennium, a path which appears to have been only briefly interrupted by the minor crisis of late 2004 and early 2005. Although the National Bank of Ukraine has certainly improved banking regulations and supervision, the country's credit boom (sevenfold real increase of credit volume between 2000 and 2005, albeit from a modest base) has raised serious concerns about credit risks. Financial fragility continues to loom large in an environment where the practice of "pocket banking" (credit institutions acting as extended financial departments of owner firms) is still widespread. Over the past months, foreign strategic investors have started to move in: Led by Raiffeisen, which purchased the second-largest Ukrainian bank in October 2005, takeovers and business expansions have raised foreigners' share in total banking assets from 13% to 26% within a year. Austrians account for somewhat less than half of all foreign-owned banking assets in Ukraine.

JEL classification: E0, E5, G21, G28, P34

Keywords: Banking, connected lending, credit boom, financial crisis, financial markets, foreign direct investment, supervision, transition, Ukraine

1 Introduction

This study outlines and assesses how the Ukrainian banking sector has developed since the outset of Ukraine's transition process, emphasizing the most recent developments. Throughout most of the 1990s, Ukraine's economic reform and banking sector development lagged behind Russia's and remained more strongly dominated by the state and former state banking institutions. However, the two countries have also displayed many similarities in the way economic agents and the authorities acted in (and reacted to) given situations at different points in time. Most recently, however, developments in the Ukrainian banking sector may have entered a strong acceleration process.

The study basically follows a chronological approach. Section 2 attempts to situate Ukraine in the "big picture" of banking transition, identifying two waves of banking reform in the country. Section 3 deals with Ukrainian banking developments in the momentous first decade of independence. The crisis of 1998 outlined in section 4 preceded a fragile recovery after the turn of the millennium (section 5), which was eventually followed by a credit boom, a politically triggered near-crisis, which was quickly defused, and persistent, serious vulnerabilities (section 6). Section 7 then focuses on the recent strong inflow of foreign direct investment (FDI) into the Ukrainian banking sector and its likely implications.

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As Austrian credit institutions were among the first to move into Ukraine and today are major Ukrainian players, section 7 features a box specifically dedicated to their experience. Section 8 finally contains a summary and conclusions.

2 Two Waves of Banking Reform

Empirical evidence shows that transition, as the author sees it, generally involves two waves of banking reform. Almost all transition countries have gone through or are still going through these distinct banking reform waves (Barisitz, 2006a). The same applies to the Ukrainian banking sector. The first reform wave was based on the abolition of central planning (including central credit and cash plans), on price and interest rate liberalization and the creation of a two-tier banking system. It was accompanied by a general and deep transitional recession, which lasted most of the 1990s. The first wave included the liberalization of bank licensing and initially lenient regulation. The Ukrainian authorities probably thought that these measures would kick-start competition in a sector otherwise dominated by the former specialized state banks inherited from the ex-socialist monobank system. As a consequence, the number of credit institutions in Ukraine multiplied from about a dozen in 1990 to 133 in 1992 and 230 in 1995.

The first reform wave typically has also included up-front recapitalization measures and so-called “surface privatization,” i.e. partial, insider or nonconventional privatization of credit institutions. In the case of Ukraine, ownership in former state-owned banks was transferred by having clients (mostly former state-

owned enterprises) take large stakes and by distributing shares to the employees of these client enterprises and of the banks themselves. This brought about a strong initial dispersion of ownership without attracting new funds, thus resulting in weak control of bank managers by owners. Important managerial decisions continued to be influenced by close relationships between bank managers and client firms as well as government agencies. Generally, measures taken during the first wave of reform, which most transition countries have completed at this point, have favored the continued existence of soft budget constraints and weak property rights, establishing a temporary, but not stable equilibrium.

New crises were just a question of time, and in many cases materialized in the late 1990s. These crises triggered new, partly painful, restructuring measures, which in the author’s view generally turned into a second wave of banking reform (encompassing crisis-induced resolution and recapitalization, the upgrading of regulation and supervision, the introduction of hard budget constraints in banking and in-depth privatization measures, which put in place strategic owners). In most transition countries, at least one large bank went under in the process, which signaled the strengthening of budget constraints. The second reform wave appears to have been completed in all Central European and in at least some South-eastern European countries (namely Bulgaria and Croatia). It seems to have progressed far or to be almost over in Romania and Kazakhstan, but is certainly still in full swing in Serbia, Montenegro, Russia and Ukraine. Countries like Belarus and Uzbekistan essentially still have both waves before them.

3 Banking Transition in the 1990s

At the outset of transition in Ukraine, the largest Ukrainian banks were the specialized institutions stemming from the split-up of the former Soviet monobank Gosbank, i.e.: Prominvestbank (specialized in industry financing), Bank Ukraina (agriculture), Ukrsotsbank (residential construction, etc.), Ukreximbank (foreign trade) and Oshchadny Bank (savings accounts; former all-Union Sberbank). Unlike the rest, the last two banks have remained in state ownership. Since the first wave of banking reform the majority of credit institutions – apart from the (former) state-owned banks – have been small or very small and have functioned as so-called “pocket banks” or “agent banks,” i.e. as extended financial departments of owner firms (similar to the development in Russia). Pocket banks have often engaged in connected lending.

Back in the early 1990s, gains from hyperinflation² – the price level jumped by over 10,000% in 1993 for example – and from currency arbitrage were among banks’ major profit sources. Up to the mid-1990s, directed credit programs remained prominent. Then they were officially abolished, and the Natsionalny Bank Ukraini (National Bank of Ukraine – NBU) and the government embarked on a macroeconomic stabilization program which was successful in bringing down inflation to double digits and stabilizing the exchange rate. Some efforts were made to

tighten prudential regulations and increase minimum capital requirements, after which the total number of banks started to level off (table 1).

Following monetary stabilization in 1995 and 1996 and the introduction of the national legal tender, the hryvnia, in 1996, Ukrainian banks looked for and found new sources of earnings: Like their Russian counterparts, they came to rely on the interbank market or on foreign loans (while funding via deposit accounts remained concentrated, to a large extent, in Oshchadny Bank), then turned to investing in the quickly expanding government treasury bill market. Treasury bills soon became the main instrument to cover budgetary gaps. Foreigners also participated in the seemingly risk-free market (Dean and Ivashchenko 1998, p. 140).

Throughout the second half of the 1990s, the Ukrainian banking sector remained quite small. Total banking assets in mid-1998 amounted to about 18% of GDP, which was much lower than in most transition economies and approximately corresponded to the total assets of a medium-sized commercial bank in a developed market economy. This reflected repercussions of the protracted and deep Ukrainian recession, the relatively slow pace of reforms and the lack of public trust in banks, which stemmed from losses suffered by the population during the hyperinflation period and from the general fragility of the sector. Deposit-taking did, however, increase after inflation had come down to two digit levels.

² Such gains could be achieved e.g. by asymmetrically adjusting deposit and lending rates for inflation.

Table 1

Ukraine: Macroeconomic and Banking Sector-Related Indicators (1991–2000)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
GDP growth (real, %)	-11.6	-13.7	-14.2	-22.9	-12.2	-10.0	-3.0	-1.9	-0.2	5.9
CPI inflation (year-end, %)	161	2,730	10,155	401	181.7	39.7	10.1	20.0	19.2	25.8
Exchange rate UAH/EUR (period average) ¹	0.385	1.928	2.322	2.113	2.768	4.393	5.029
Exchange rate UAH/USD (period average) ¹	0.322	1.473	1.830	1.862	2.450	4.130	5.440
M2 (year-end, % of GDP)	..	50.0	32.5	26.7	12.6	11.1	13.3	15.0	16.6	18.5
Number of banks (of which foreign-owned, year-end)	..	133	211	228(12)	230(12)	229(14)	227(22)	175(28)	161(30)	154(31)
Asset share of state-owned banks (%)	13.5	13.7	12.5	11.9
Deposit rate (average, year-end, % p.a.)	160	209	70.0	33.6	18.2	22.3	20.7	13.7
Lending rate (average, year-end, % p.a.)	184	250	123.0	79.9	49.1	54.5	55.0	41.5
Domestic credit to the private sector (year-end, % of GDP)	1.5	1.4	2.5	7.8	8.6	11.2
Nonperforming loans (year-end, % of total loans)	34.6	34.2	32.5

Source: NBU, various EBRD Transition Reports, *wiiv*.

¹ Prior to 1997: Ukrainian karbovanets/ECU and Ukrainian karbovanets/USD, respectively; 1997–1998: UAH/ECU and UAH/USD, respectively.

Two banks founded in the early 1990s as private startups strongly and successfully expanded their activities: Bank Aval, which assisted the authorities in administering pension payments, and PrivatBank, which specialized in serving large enterprises in the industrial center of Dnepropetrovsk (east-central Ukraine) (Barisitz, 2000a, p. 773). Although explicit directed credit campaigns had been discontinued, there were ample signs that informal practices went on. According to banking professionals, many loans were “unofficial but ... unavoidable” preconditions for “favors” from the authorities (Luhovyk and Korchak, 1998, p. 16).

4 The Crisis of 1998

Shortly after the outbreak of the Russian crisis in August 1998, financial markets lost confidence in Ukraine, and the treasury bill market experienced large-scale withdrawals of funds, which contributed to strong downward pressure on the hryvnia and precipitated a fiscal crisis. Though severe, the consequences of the Russian crisis on the Ukrainian banking system did not lead to a collapse, like the one Russia experienced, for two

main reasons: First, the authorities reacted cautiously, averting immediate government default by swiftly entering into restructuring negotiations with treasury bill holders. The depreciation of the hryvnia was not quick and massive, but rather spread out over a longer time; therefore, it was easier for banks to continue servicing their foreign exchange liabilities or to initiate negotiations with creditors. Second, credit institutions were less exposed to investments in treasury bills and foreign currency debts than their Russian counterparts (in relative terms). Moreover, banks had incurred only modest direct exposure to Russia (Barisitz, 2000b, p. 83).

After increased withdrawals from a number of banks in the fall of 1998, the situation calmed down again. At least one major credit institution was subject to a financial rescue operation involving a restructuring of its activities and sizable NBU refinancing loans. A considerable number of smaller marginal banks had their licenses repealed and the total number of credit institutions declined to 175 at end-1998 and 161 at end-1999 (table 1). But no systematic cleaning-up operation was carried out, and the

overall state of Ukrainian banking remained precarious after the crisis; several larger banks remained undercapitalized, some probably insolvent. Enforcement of rules and regulations continued to be weak and selective. Still, one can argue that the reaction of the authorities to the 1998 crisis marked the beginning of a so far protracted second reform wave in Ukraine.

5 Fragile Recovery since the Turn of the Millennium

After a decade of uninterrupted economic contraction, 1999 represented a turning point and 2000 was the first year of a steep recovery. The depression in Ukraine had been even more pronounced than in Russia, but this also applied to its economic rebound, which accelerated to double-digit annual growth in 2004, before slowing down in 2005 and early 2006 (table 2). Apart from the base effect and plenty of excess capacities, some of the driving forces of Ukrainian economic expansion have been the following: After the financial crisis of 1998, as part of the general monetary easing, the hryvnia continued to decline throughout the following year, which favored import substitution (food and light industry). Strong rises in world market prices for some of Ukraine's prime exports (steel, chemical products) as well as a recovery of demand from Russia stimulated export-led growth in 2000. Both effects constituted major favorable terms-of-trade shifts for Ukraine and resulted in sizeable current account surpluses. Later on, salaries and pensions entered an upward trajectory, domestic demand gathered momentum and the impressive Ukrainian credit boom contributed to financing the expansion (Barisitz, 2006b, pp. 161–162).

On top of experiences gathered the hard way over the previous decade, the problems of chronic Ukrainian payment arrears for Russian oil and gas (on which the economy so strongly depends) and Russia's recurrent energy price adjustments and supply cuts may have added up to provoking a more general change of incentives for policymaking – an impulse with continuing impact. Whatever the case, a more reform-oriented government came to power in Kyiv in early 2000 and initiated important adjustments: Macrostabilization was strengthened and based on a U.S. dollar de facto nominal anchor for the hryvnia, and, for the first time since the collapse of the U.S.S.R., a balanced Ukrainian budget was achieved. Subsidies were cut, tax rules simplified and enforced. The authorities took steps to extend financial discipline to the energy sector. They accelerated privatization and dissolved former kolkhozes (collective farms). Moreover, they enacted a new banking law. Although the tenure of this administration proved relatively short, its successors did not generally reverse economic reforms and partly carried them on.

Notwithstanding the undercapitalized and precarious state of large parts of the banking sector, the significant monetary easing resulting from the 1998 crisis contributed to a pronounced recovery of banking activity in 1999. The new Law on Banks and Banking Activity became effective in January 2001 and served to strengthen the NBU's supervisory powers and to improve the regulatory environment for banks: It raised minimum capital requirements, streamlined licensing procedures and defined and extended the NBU's authority in rehabilitating or liquidating

Table 2

Ukraine: Macroeconomic and Banking Sector-Related Indicators (1999–2006) – Part 1

	1999	2000	2001	2002	2003	2004	2005 ¹	H1/2006 ¹
GDP growth (real, %)	–0.2	5.9	9.2	5.2	9.4	12.1	2.6	5.0
CPI inflation (year-end, %)	19.2	25.8	6.1	–0.6	8.2	12.3	10.3	6.8
Exchange rate UAH/EUR (period average)	4.393	5.029	4.814	5.030	6.024	6.609	6.389	6.067 ²
Exchange rate UAH/USD (period average)	4.130	5.440	5.372	5.327	5.333	5.319	5.125	5.050 ²
M2 (end of period, % of GDP)	16.6	18.5	22.1	28.5	35.3	36.4	43.4	..
Number of banks (of which partly foreign-owned, end of period)	161(30)	154(31)	152(21)	157(20)	158(19)	160(19)	164(23)	165(28)
Degree of financial intermediation (bank assets/GDP, %)	19.6	21.8	23.3	28.3	37.9	43.5	51.1	58 ²
Asset share of state-owned banks (end of period, %)	12.5	11.9	11.8	12.0	9.8	8.0
Asset share of foreign-owned banks (end of period, %)	10.5	11.1	12.1	12.3	12.1	13.0	21.4	26
Share of foreign capital in regulatory capital of banks (%)	..	13.3	12.5	13.7	11.3	9.6	19.5	21.1 ³

Source: NBU, various EBRD Transition Reports, IMF, Raiffeisen Zentralbank, wiw, author's calculations.

¹ Preliminary data or estimate.

² (January to) March.

³ May.

banks. After years of difficulties in trying to ensure greater compliance of the former state-owned Bank Ukraina (which served the agricultural sector) with prudential regulations, the central bank finally overcame political barriers and sent an important signal by allowing it to fail and deciding to liquidate it in July 2001 (Loehmus, 2002, p. 18). The resolution of Bank Ukraina was facilitated by the establishment of the Fund for the Guarantee of Deposits of Natural Persons in September of that year.

State-owned Oshchadny bank (or Oshchadbank – Savings Bank) had also suffered from the 1998 crisis, and a World Bank-supported rehabilitation plan for the undercapitalized institution was agreed upon and launched in 2000. Restructuring Oshchadbank has proved to be time-consuming and has yielded mixed results so far. The institution was saddled with a large portfolio of bad loans to loss-making state-owned enterprises and continued carrying out

rollovers. Given lack of progress, the World Bank suspended financial assistance to the project in 2004 (Dubien and Duchêne, 2005, p. 54), but the following year, World Bank support was resumed.

Increasing competition has contributed to losses of market shares for Oshchadbank (while still the fourth-largest credit institution at end-2003, it only ranked seventh by March 2006) and for state-owned Ukreximbank, as well as for former state-owned banks saddled with dubious claims, e.g. Prominvestbank (the third-largest) and Ukrsootsbank. The two big private credit institutions unburdened by the past, PrivatBank and Bank Aval, became the largest banks of the country (table 4). It would appear that these two private banks were “co-opted” into the handful of “system banks,” which reportedly benefit from a special relationship with the authorities. All of these system banks feature among the top ten Ukrainian credit institutions

(table 4).³ As of mid-2006, there were still 165 banks in the country (table 2). Particularly the smaller ones continued to act as pocket banks of enterprise groups/conglomerates whose ownership structures have often been difficult to detect, notably where ownership has been “layered” or “packaged” through several companies or entities (IMF, 2003, p. 7). Many of these smaller banks typically tend to be single-branch institutions.

6 The Ukrainian Credit Boom, the Near-Crisis of Late 2004/Early 2005 and Persisting Vulnerabilities

Ukraine has recently experienced a credit boom fed by strong economic growth (since 2000), a credible exchange rate anchor which stabilized expectations, a (further) decline of inflation, which bolstered confidence, strong money demand growth, which paved the way for rapid remonetization and the structural reform initiatives of 2000 and 2001, which contributed to altering incentives for banking. But the most important driving force was the huge accumulated catching-up potential of the economy. While annual growth of commercial bank credit to the economy gathered momentum until 2003, when it reached a hefty 55% (in real terms), it decelerated sharply in 2004 (to 18%), but re-accelerated again in 2005 (to 41%) and in the first half of 2006. This equals an average annual growth rate of over a third since 2000 or a sevenfold real increase in six

years – albeit from a very modest point of departure (table 3).

The sudden deceleration in 2004 happened mostly in the second half of the year and was largely caused by politics: First, inflation picked up again in the wake of a relaxation of fiscal policies in the run-up to the presidential elections as well as in response to emerging capacity bottlenecks.⁴ This put the hryvnia exchange rate under pressure, triggering market interventions by the NBU. Then, political instability in connection with the tumultuous presidential election and change of government of November and December 2004, combined with the existing fragility of confidence in the banking sector, gave rise to a minor banking panic. Pressure on the currency increased and depositors, mostly in eastern Ukraine, stepped up withdrawals from bank accounts and changed their money into foreign currencies. Capital flight gained momentum. At their peak in early December, withdrawals attained 17% of total Ukrainian household deposits. The outflow of deposits caused banks to curtail growth of credit activity.

The NBU reined in the impact of these runs with a package of measures combining administrative restrictions on withdrawals, stabilization credits to some banks and stepped-up foreign exchange interventions. The latter altogether reached about EUR 2.5 billion (over the period from September to December 2004), draining around a quarter of the foreign exchange re-

³ These “system banks” are understood to include: Oshchadbank (savings), Prominvestbank (industry), Ukreximbank (foreign trade), Ukrsofsbank (construction), Bank Aval (pensions), PrivatBank (Dnepropetrovsk) (see Berger, 2004, p. 4).

⁴ Inflation rose from 8% in 2003 to 12% in December 2004 and further to 15% in August 2005 (year-on-year). Since then it has been receding again (to 7% in June 2006).

Table 3

Ukraine: Macroeconomic and Banking Sector-Related Indicators (1999–2006) – Part 2

	1999	2000	2001	2002	2003	2004	2005 ¹	Q1/2006 ¹
Deposit rate (average, end of period, % p.a.)	20.7	13.7	11.0	7.9	7.0	7.8	8.5	..
Lending rate (average, end of period, % p.a.)	55.0	41.5	32.3	25.4	17.9	17.4	16.2	15.7
Deposits (volume of deposits/GDP, end of period, %)	9.6	11.4	12.8	16.9	23.4	24.1	31.7	..
Credit (credit volume/GDP, end of period, %)	9.0	12.4	14.5	19.4	26.6	27.1	35.3	44.0
Credit growth (real, CPI-deflated, %)	24.2	36.0	34.5	48.1	54.5	18.5	41.0	49.0 ³
Share of nonperforming loans in total loans (%) ²	35.8	29.6	24.6	21.9	28.3	30.0	23.1 ³	..
Specific provisions/nonperforming loans (%)	..	38.4	39.2	37.0	22.3	21.1	23.5 ³	..
Return on equity (%)	8.7	-0.5	7.5	8.0	7.6	8.4	10.4	12.8 ⁴
Capital adequacy (capital/risk-weighted assets, %)	19.6	15.5	20.7	18.0	15.2	16.8	15.0	14.5 ⁴

Source: NBU, various EBRD Transition Reports, IMF, Raiffeisen Zentralbank, author's calculations.

¹ Preliminary data or estimate.

² IMF estimate; rise in nonperforming loans in 2003 partly due to new classification rules.

³ June (year on year).

⁴ May.

serves the NBU had held at the time. By February 2005, calm had been largely restored; pressures on the currency subsided, restrictions were lifted, bank accounts and reserves were filling up again (Astrov, 2005, p. 105). In short, the banking system had weathered the political turmoil reasonably well.

But the slowdown of credit expansion had carried over into the first months of 2005.⁵ Next to this slowdown, the temporary decline or stagnation of world market prices for key Ukrainian export goods (particularly steel and chemicals) as well as the economic uncertainty emanating from the new government's confusing re-privatization strategies and disputes contributed to the pronounced reduction of economic growth in 2005 (Barisitz, 2006b, pp. 162–163).

The current account balance deteriorated. Still, by the second half of the year, bank lending had resumed its high pre-crisis rate of expansion. The share of long-term loans (with maturities of more than one year) in total loans increased from below 50% in early 2005 to over 60% toward the end of the year. Lending as well as other banking activities appear to have further accelerated in the first months of 2006.

The loans-to-GDP ratio almost quadrupled from 9% in 1999 to 35% in 2005, a development which represented one of the most rapid expansions of this kind so far registered in transition economies (possibly only trumped by Kazakhstan) (table 3). The share of household loans in total loans grew from a couple of percentage points to over one-fifth. Like in

⁵ In the first half of 2005, real credit expansion came to 20% (year-on-year), which was only slightly higher than the comparatively low real credit growth rate in the year 2004 (table 3).

other transition economies, (hitherto non-existent) auto and mortgage loans as well as credit card lending have begun to multiply. The lion's share of the credit expansion has been financed by deposit growth. At the same time, credit institutions have also been acquiring growing foreign liabilities. The assets-to-GDP ratio more than doubled from 20% at end-1999 to 51% at end-2005 (table 2).

The credit boom has raised serious concerns about credit risk in the banking sector: While there is no doubt that the increase embodies a long-awaited real convergence process, Ukraine's loans-to-GDP ratio has reached a level well within the average range of the more advanced transition countries (like Poland or Bulgaria) and above average for transition countries whose institutional quality in the banking sector is similar to Ukraine. Moreover, any lending boom of a similar scale can be problematic because risk assessments of individual loans tend to suffer in times of very dynamic loan growth (Schaechter, 2004, p. 21).

While the economic recovery helped credit institutions overcome some of their problems, many banks remained in relatively weak financial conditions. Despite the new banking law, insider lending practices continued, and according to IMF estimates, 23% of total loans were nonperforming in mid-2005 (table 3). However, based on a survey of March 2004, the NBU estimated that 94% of loans classified as "substandard" (a subcate-

gory of nonperforming loans) were being serviced timely. Excluding them from nonperforming loans would yield an estimated rate of 7% of loans overdue (Ong et al., 2005, p. 72). Given the overall stability of the exchange rate in recent years as well as the prevailing hryvnia appreciation pressures and lower interest rates on foreign exchange loans, taking up foreign exchange loans has been quite popular, if risky: In early 2006, over 40% of all credits were denominated in foreign currency (about 85% of the latter in U.S. dollars, 13% in euro), and many of them were extended to unhedged borrowers.

The buildup of capital and provisions has not kept pace with credit expansion, and the capital adequacy ratio has tended to decline moderately; only 2004 saw an interruption of this trend, which was probably related to the temporary slowdown in credit growth. Ukrainian banks' profitability has remained below the levels observed in other transition economies. However, most recently (2005 and early 2006), return on equity (ROE) has risen despite a further decline in interest rate margins (lending minus deposit rates).

The EBRD's index of banking sector reform⁶ in Ukraine came to 2.0 for the period of 1999–2001, then improved to 2.3 for 2002–2004, and 2.7 in 2005. In the same period (1999–2005), the index indicating Russia's banking reform progress rose from 1.7 to 2.3. The EBRD index for

⁶ This indicator measures reform progress by the liberalization of interest rates and the credit allocation process, the volume of lending to the private sector, private ownership in the banking sector, the level of competition between banks, bank solvency, the establishment of a framework for regulation and prudential supervision. The indicator can take values between 1 and 4+, with 1 representing little progress, and 4+ corresponding to full convergence of banking laws and regulations with BIS standards and a full set of banking services (EBRD, 2004, p. 200).

Bulgaria advanced from 2.7 to 3.7, whereas Poland's track record is 3.3 versus 3.7. Notwithstanding its impressive advances in financial deepening, Ukraine is still seen to be trailing substantially behind some new EU Member States and acceding countries in terms of the depth of banking reforms so far achieved.

To counter weaknesses in capitalization and to stimulate consolidation, the NBU raised the minimum capital adequacy ratio from 8% to 10%, effective from March 2004. Foreign currency loan loss provisions and limits for related party lending were tightened. In late 2005, the NBU raised regulatory capital requirements for certain operations including foreign exchange transactions and external borrowing, and gave Ukrainian credit institutions a deadline until end-2006 to comply with the new requirements. This will probably exert some consolidation pressure on a number of weakly capitalized smaller banks.

Yet, various areas need to be further strengthened: banks' corporate governance and risk management capacities, creditor and property rights, the court system, transparency and banking supervision. The latter still seems to rely on highly formal methods instead of more risk-based approaches. Given the vulnerable environment and the long-standing ban on opening foreign bank branches (also observed in Russia), it is not surprising that – despite the boom – foreign banks' presence has remained modest until most recently. As of end-2004, there were 19 credit institutions in Ukraine in which foreign owners held majority stakes (many of them Russian); together, they accounted for about one-eighth of total banking assets. Of the for-

eign-owned banks, only Raiffeisenbank was among the ten largest banks of the country. ING Bank, Citibank Ukraine and HVB Bank Ukraine ranked among the top 20.

Should economic growth remain subdued for a prolonged period or should there be a new economic downturn (which could be provoked by delayed repercussions of the sharp increase in gas prices at the beginning of 2006, by further energy price adjustments or by another deterioration of the terms of trade), this could feed through into higher loan impairment levels.

7 Strategic Investors Move In

Despite (or perhaps because of) the challenging situation, some EU credit institutions have recently made important acquisitions in Ukraine. In doing so, these strategic investors have certainly banked on the size and still rich expansion potential of the Ukrainian market as well as its proximity to the European Union. A major incentive for investors is the fact that Ukraine is one of the few transition economies in which some large enterprises and credit institutions are yet to be privatized. The investors have thus been attracted by the (so far) relatively low level of competition and the generous profit prospects offered by Ukraine. Moreover, they have probably also expected positive long-term effects of the "Orange Revolution."

The pioneer among strategic investors was RZB (Raiffeisen Zentralbank), which had already been present in Ukraine with a subsidiary: In late August 2005 Raiffeisen International Bank Holding AG concluded negotiations on the takeover of 93.5% of the country's second-largest credit institution, Bank Aval, for a price of

Table 4

The Top Ten Banks in Ukraine (measured by their total assets, as at March 2006)

Rank	Credit institution	Majority owner (share in %) ¹	Total assets (EUR million)	Share in total banking sector assets (%)	Balance sheet capital (EUR million)	Number of branches
1	PrivatBank	private Ukrainian investors	3,826	11.5	380	2,005
2	Bank Aval	Raiffeisen International (93.5)	3,215	9.6	305	1,342
3	Prominvestbank	private Ukrainian investors	2,355	7.1	232	737 ³
4	Ukrsibbank	BNP Paribas (51)	1,859	5.6	157	921
5	Ukreximbank	state-owned	1,820	5.5	183	80 ³
6	Ukrsotsbank	Banca Intesa (85) ²	1,795	5.4	175	518
7	Oshchadbank	state-owned (savings bank)	1,601	4.8	131	6,500
8	Raiffeisenbank Ukraine	OTP ²	1,224	3.7	117	39 ³
9	Nadra	private Ukrainian investors	1,032	3.1	117	479 ³
10	Brokbiznesbank	private Ukrainian investors	792	2.4	100	146

Source: Association of Ukrainian Banks.

¹ As at mid-2006.

² Deal yet to be finalized.

³ December 2005.

EUR 850 million (USD 1.03 billion), which reportedly corresponds to a multiple of book value of 3.6.⁷ The acquisition was finalized in October 2005. It raised foreigners' share in Ukraine's total banking assets from 13% to around 21% (table 2) and signaled an improvement of the weak investment climate. The same goes for the successful re-auction of the large steel company Kryvorizhstal for almost EUR 4 billion to the British-Indian Mittal corporation in October 2005. These lavish FDI inflows replenished the country's foreign currency reserves.

A spree of banking takeovers ensued: In December 2005, BNP Paribas agreed on the purchase of 51% of Ukrsibbank (Ukraine's fourth-largest credit institution) for a price of EUR

420 million. In February 2006, Banca Intesa agreed to pay around EUR 900 million (about 5.2 times the corresponding book value) to buy 85% of Ukrsotsbank (the sixth-largest bank). However, the deal has not yet been finalized. In March 2006, Crédit Agricole announced the takeover of 98% of Indexbank, a medium-sized bank (ranked 25th; price of acquisition: EUR 220 million). In June 2006, OTP (Országos Takarekpenztar es Kereskedelmi Bank, Hungary) and Raiffeisen International arranged the sale of Raiffeisenbank Ukraine for EUR 650 million to OTP (table 4, see box below). In mid-July, Eurobank, the second-largest Greek bank, announced its acquisition of a 99% stake in Universal Bank, a smaller bank. Just two weeks later, Erste

⁷ This figure as well as other announced prices and multiples of book values published in the media and/or on banks' websites and mentioned below correspond to the pecuniary part of respective contracts. The money paid, however, does not necessarily cover the entire transaction, which may include nonpecuniary components (job guarantees, investment pledges, assumption of contingent liabilities, etc.).

Austrian Banks' Activities in Ukraine

Austrian banks were among the earliest to enter the Ukrainian market. They initially chose greenfield startups. Raiffeisen Zentralbank opened a representative office in 1994, which became a subsidiary under the name Raiffeisenbank Ukraine in 1998. In 1997, Creditanstalt Ukraine started business. In 2000, Bank Austria-Creditanstalt (BA-CA) and the Hypo-Vereinsbank (HVB) Group (of Germany) merged, which brought the takeover of BA-CA Ukraine by HVB. BA-CA Ukraine thus ceased to be an Austrian credit institution and was renamed HVB Bank Ukraine. Whereas Raiffeisenbank (and BA-CA Ukraine) initially had concentrated on serving international and Austrian firms active in Ukraine (including startups), it later broadened its range of activities to include cooperation with big Ukrainian commercial clients. Later on, the small but booming consumer credit sector became a major focus of attraction.

Thanks to strong organic growth, Raiffeisenbank Ukraine was the eighth-largest bank of the country by early 2006. Raiffeisen's acquisition of the second-largest credit institution, Bank Aval, more than doubled the number of Raiffeisen's branches and outlets across Central and Eastern Europe. In April 2006, Bank Aval was renamed Raiffeisen Bank Aval. Foreign banks' buoyant demand for Ukrainian credit institutions in the following months pushed up price-to-book ratios, which contributed to Raiffeisen's eventual decision to accept OTP's offer for Raiffeisenbank Ukraine in June 2006. Raiffeisen had originally intended to merge its Ukrainian subsidiary with Bank Aval, which would have created an outright market leadership position, but changed its mind and sold the subsidiary to OTP, due to apparent organizational difficulties in preparing the merger and to the attractive price (around 4.7 times the book value) offered.

Erste Bank's agreement of July 2006 to purchase a majority stake in Prestige Bank relates to a relatively small outfit reportedly founded in late 2005 by the former manager-owners of Bank Aval (the businessmen who had controlled Bank Aval prior to its acquisition by Raiffeisen). If one assumes this deal as well as OTP's acquisition to be finalized, as at early August 2006, the two banks in Austrian ownership active in Ukraine (Raiffeisen Bank Aval and Prestige Bank) together accounted for about 10% of the total assets of the sector (of which the overwhelming share goes to Raiffeisen Bank Aval). Thus, Austrians possess around 40% of all foreign-owned banking assets in Ukraine. Austrian banks' cost/income ratio came to about 55% in mid-2006, which is much lower than the sector-wide average.

The following details on the two banks are of interest (see also sections 3 and 5 and table 4): Bank Aval (founded in 1992), majority-owned (93.5%) by Raiffeisen International, boasted a share of 9.6% in total banking assets in March 2006 and possesses a dense network of branches (1,342) throughout the country. In 1994, Bank Aval had won a tender to service the State Pension Fund and the Ukrainian Post Office; in 1996 it won another tender to provide services to the State Customs and Excise Authority. Assisting in these institutions' transactions became a major focus of the bank's activities. Raiffeisen Bank Aval therefore commands a strong retail position. Once Erste Bank's purchase of 50.5% of Prestige Bank (total assets in mid-2006: EUR 99 million) is cleared by the Ukrainian and Austrian authorities, Prestige Bank is to be re-named Erste Bank Ukraine. In the next two years, at least 25 branch offices are to be established. The new owners aim at raising the bank's market share to 4% in the medium term (which would require a more than tenfold increase from its current level, 0.25%.)

Bank (of Austria) announced its agreement to acquire 50.5% of Prestige Bank (ranked 72th) for EUR 28 million and a pledge to invest up to EUR 117 million in the credit institution (Financial Times, 2006, p. 17). Foreign investors' share in total banking assets rose to about 26% in mid-2006. Increased FDI is certainly contributing to the enhancement of the sector's risk management practices and efficiency. In terms of this strong presence of foreign strategic investors, Ukraine has overtaken Russia, which is still dominated by a few large state-owned banks (particularly Sberbank, whose privatization is not imminent).

8 Summary and Conclusions

The paper provides an overview and assessment of the evolution of the Ukrainian banking sector since the outset of transition, focusing on most recent developments. The 1990s brought forth turbulent changes against the background of continuous economic contraction. In the early years of the decade, banks thrived on gains from hyperinflation and currency arbitrage, and subsequently treasury bills. The Russian crisis of August 1998 quickly spread to Ukraine, but cautious decisions by the authorities and reduced exposure on the part of Ukrainian banks averted financial collapse. A fragile recovery at the turn of the millennium eventually paved the way for a credit boom fed by accelerating economic activity, successful macrostabilization, rapid remonetization tendencies and structural reform initiatives. The boom brought a sevenfold real increase of the credit volume from (a very modest) 9% of GDP at end-1999 to 35% of GDP at end-2005, which bears witness to Ukraine's catching-up potential. The

share of household loans in total loans grew from a couple of percentage points to over one-fifth.

Although the authorities enacted a new banking law in 2001, subsequently strengthened regulation and supervision, and raised minimum capital adequacy ratios in 2004, many credit institutions remained in relatively weak financial conditions. Ukraine's credit boom was only briefly interrupted by the minor crisis of late 2004/early 2005, which was largely triggered by political instability in connection with the tumultuous presidential election and change of government of November and December 2004. Some local bank runs were quickly reined in by NBU measures which combined administrative restrictions on withdrawals, stabilization credits to some banks and foreign exchange interventions.

The (resumed) swift expansion of banking activity has raised serious concerns about loan risks. Financial fragility continues to loom large in an environment where traditional "pocket banking" (credit institutions acting as extended financial departments of owner firms) and connected lending are still widespread. Foreign currency lending came to 40% of total loans in early 2006. The build-up of capital and provisions has not kept pace with credit expansion. Various areas need further strengthening: banks' corporate governance and risk management capacities, creditor and property rights, the court system, transparency and banking supervision. The latter still seems to rely on highly formal methods rather than on more risk-based approaches. A potential new economic downturn (which might be triggered by a deterioration of the terms of trade) could

feed through into higher loan impairment levels.

But some of these weaknesses are being addressed microeconomically: Drawn by the size and still rich expansion potential of the Ukrainian market, as well as by expected long-term benefits of the “Orange Revolution,” foreign strategic investors have made major moves into the country over the past months: Led by Raiffeisen, which purchased the second-largest Ukrainian credit institution (Bank Aval) in October 2005, take-

overs and business expansions raised foreign investors’ share in total banking assets from 13% to 26% within a year. Among the new players are: BNP Paribas, Banca Intesa, Crédit Agricole and OTP. Austrian investors (i.e. Raiffeisen Bank Aval and the much smaller Prestige Bank, which was taken over by Erste Bank) have opted for acquisitive growth and account for approximately 10% of total banking assets in Ukraine, which is somewhat less than half of all foreign-owned banking assets.

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Modeling Dependent Credit Risks for Application to Off-Site Banking Supervision

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During the past five years the Oesterreichische Nationalbank (OeNB), together with the Austrian Financial Market Authority (FMA) and university experts, has developed and implemented several modern tools for the purposes of off-site banking analysis and supervision. One of these tools is the Value-at-Risk (VaR) model, which allows for the standardized quantification of every single bank's economic capital. Within this portfolio model framework, a total VaR is calculated as an aggregation of credit, market and operational VaR, assuming perfect correlation between the risk categories. The methodology for measuring the credit risk of a bank's portfolio is currently based on the standard CreditRisk⁺ model, an actuarial model for aggregating risks in a credit portfolio with a single risk factor.

In 2005 the OeNB and the Vienna University of Technology launched a research project with the aim of developing an extended version of the credit risk model that is able to account better for portfolio diversification effects. As the background risk factors in the standard CreditRisk⁺ model have to be orthogonal, resemblance to real-world industrial sectors or other macroeconomic factors, which often appear to be strongly correlated, is not possible. This paper gives an overview of our approach to modeling correlations among systematic risk factors. Other extensions of the model, like the ability to calculate a single obligor's risk contribution and the incorporation of stochastic loss given default, are touched upon.

JEL classification: C16, C65, G38

Keywords: Value-at-Risk (VaR), Expected Shortfall (ES), CreditRisk⁺, factor correlations, risk contributions, off-site banking supervision

1 Introduction

As on-site audits take a long time and require substantial amounts of resources, and as they cannot be carried out very frequently because there are so many banks in Austria, off-site analysis plays a major role in the supervision process. Therefore, the Oesterreichische Nationalbank (OeNB), together with the Austrian Financial Market Authority (FMA) and university experts, launched several projects in the recent years with the aim of developing modern tools for sound single-bank risk quantification. These models use supervisory reporting data and allow for the identification of possible bank problems in a standardized way. The timely anticipation of risk potentials and

imminent bank problems is an essential prerequisite for maintaining the country's financial stability.

One of these new off-site analysis tools is a portfolio model which makes it possible to estimate every single bank's economic capital; it is set to cover the total losses over a one-year horizon with a certain probability. Both Value-at-Risk (VaR) and Expected Shortfall (ES) have become the most common measures for quantifying economic capital. They not only make it possible to quantify risks in the individual risk categories, but also to handle them in an aggregated manner: the total VaR is calculated as an aggregation of credit, market and operational VaR, assuming perfect correlation between the risk catego-

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ries. The comparison of the total possible loss for the next year at a certain confidence level with all available capital reserves enables us to draw conclusions on the risk-bearing capacity of every single bank in Austria (see OeNB and FMA, 2004).

To calculate the credit VaR and to assess credit risk, we currently use a model based on the standard CreditRisk⁺ model, an actuarial model for aggregating risks in a credit portfolio, with a single risk factor. In this framework, dependence between obligors arises implicitly due to a single systematic risk factor, which drives the obligors' probabilities of default. The conventional CreditRisk⁺ approach allows for more than one common factor; these factors have to be statistically independent. The orthogonality of the background risk factors hinders any resemblance to real-world macroeconomic factors or industry sectors, which often appear to be strongly correlated.

In 2005 the OeNB and the Vienna University of Technology launched a research project² with the aim of developing an extended version of the credit risk model that is able to account better for portfolio diversification effects. As the background risk factors in the standard CreditRisk⁺ model have to be orthogonal, resemblance to real-world industrial sectors or other macroeconomic factors, which often appear to be strongly correlated, is not possible. This paper gives an overview of our approach to the incorporation of correlations among systematic risk factors. Other extensions of the model, like the ability to calculate a single obligor's risk

contribution and the incorporation of stochastic loss given default, are touched upon.

1.1 An Overview of the Model

The consideration of risk factor dependencies represents the main extension of the new approach in comparison to the standard CreditRisk⁺ model and the numerically stable implementation currently in use. We use two multivariate factor distributions, which incorporate factor correlations. The moment-generating functions of both distributions have a closed analytical form, which fit into the framework of the standard model and can be handled using the recursion algorithms similar to the ones developed for the previous implementation. The parameters of the new distributions then have to be fitted to the covariance matrix of the risk factors.

First, we consider a multivariate gamma distribution of the following form: the dependence between the sectors results from the common dependency on one (hidden) background variable; that is why this model is called the "hidden gamma" model. As in Giese (1996), constraints on the model's correlation parameters impose a very heterogeneous structure on the default correlation between obligors in different sectors and render the calibration to a target covariance matrix very difficult – there will only be rare cases where the assumed covariance matrix provides a good approximation for the true covariance matrix to be modeled. The hidden gamma distribution can provide a good fit only if

² The project was headed by Professor Uwe Schmock, Institute of Mathematical Methods in Economics, Research Unit Financial and Actuarial Mathematics, Vienna University of Technology.

factors with high variances are also significantly more strongly correlated than other factors.

The second multivariate factor distribution we consider is the compound gamma distribution. It has a more convenient covariance structure. In this case the gamma distributions themselves are mixture distributions, where the factor variables are independently gamma distributed, conditional on a positive gamma-distributed random variable T (in this case, the shape parameters of the factors' gamma distributions, not the sector variables themselves, are uniformly scaled by T). The compound gamma model produces less artificial correlation structures than the one produced by the hidden gamma distribution.

The parametric characteristics of these two distributions allow the recursion algorithm already used for the single factor model to be used. The model calibration, on the other hand, is not straightforward. Fitting the model to an externally given covariance structure is difficult, and because of the parameter restrictions, dependencies cannot always be matched sufficiently well.

The second important extension of the model is its possibility to calculate individual obligors' risk contributions. For further portfolio analysis, the expected shortfall of a certain level can be decomposed into risk contributions by single obligors and risk sectors, in a way that detects the impact on the portfolio risk by subportfolios (see Tasche, 2004, and Schmock, 2006).

Finally, the standard framework is extended to allow for stochastic loss given default. When collateral is used, the risk becomes twofold: First, there is uncertainty with respect to

the ability to access collateral and to the costs required to sell it. Second, there is uncertainty with respect to the market value and liquidity of collateral. Therefore, the use of collateral to mitigate credit risk causes additional loss given default risk, which can be accounted for by a stochastic loss given default rate. Currently, binomial and some empirical distributions can be handled.

1.2 Related Research

Bürgisser et al. (1999) suggest an approach to calibrating the single-factor sector variance in a way that accounts for sector dependencies. In Giese (1996), this model is compared to the hidden gamma and the compound gamma models: The compound gamma model represents a reasonable trade-off in comparison to the other models mentioned, displaying consistently fatter tails than the standard CreditRisk⁺ model and the single factor model of Bürgisser et al. Compared to the hidden gamma model, the compound gamma model smoothes the heterogeneity of the original covariance matrix and because of this produces less fat tails than the hidden gamma model and in most cases the best fit to the empirical covariance structure.

A recent approach to a general framework for calibrating dependent credit risk models is described in Gusso (2003). It comprises two urn models for the joint probability of defaults of dependent credit risks and introduces an estimation approach based on the expectation-maximization algorithm.

1.3 Applications to Off-Site Banking Analysis and Supervision

First, we use the new model to calculate the credit loss distribution of every single bank in Austria, but also of a benchmark portfolio consisting of all banks' loan exposures, on a quarterly basis in a standardized way starting with the first quarter of 2007. Our aim is to assess the credit risk of individual banks and to gain some insights about the credit risk situation of the banking system as a whole.

Second, credit loss at a certain confidence level is aggregated together with market loss and the loss from operational risk at the same confidence level in order to derive the total loss of a single credit institution, assuming perfect correlation between the three risk categories. The total loss is then compared to the bank's capacity to cover losses quantified by its available capital reserves of different quality. Probabilities of different levels of financial distress are calculated, for example the probability of losses exceeding the level which was provided for or the probability that components of balance sheet equity (excess equity) need to be used to cover the losses, with the bank continuing to exist, and so on (see OeNB and FMA, 2004). Additionally, the main risk contributors can be identified for every single bank.

Third, various scenario analyses could also be performed to deliver information about possible threats to the soundness of banks.

The model is implemented in Java and can be run via a standard user interface. The risk factor variances and the parameters driving the factor correlation can be estimated using Matlab.

All consolidated findings about possible bank problems are disclosed quarterly in a series of standard reports which contain detailed information on our risk measures.

2 Data

The main sources of data used are supervisory data from the monthly balance sheet reports (monthly reports) to the OeNB and the database of the OeNB's Major Loans Register. In addition, we use default frequency data in industry groups from the Austrian rating agency Kreditschutzverband (KSV).

Credit and financial institutions are obliged to report major loans to the OeNB monthly. This reporting obligation exists if credit lines granted to or utilized by a borrower exceed EUR 350,000. The Major Loans Register covers about 80% of the total loan volume of Austrian banks, but its level of individual coverage may be very low, especially in the case of small banks.

In addition to balance sheet data, monthly reports contain a fairly extensive assortment of other data that are required for supervisory purposes, including capital adequacy figures as well as figures for loans and for deposits with various maturity buckets.

The data provided by monthly reports and the Major Loans Register provide us with detailed information on the banks' loan portfolios. This database contains all loans exceeding a volume of EUR 350,000 on an obligor-by-obligor basis; an approximation of the volume under this threshold is made on the basis of a report that is part of the monthly report and that provides the number of loans to domestic nonbanks for different volume buckets. No comparable sta-

tistics are available for nondomestic loans. However, one can assume that most of cross-border lending exceeds the threshold of EUR 350,000, and hence the risk associated with non-domestic loans below this threshold appears negligible.

As risk factors are set to be the industry sectors in our framework, we assign each loan to an industry sector. The definition of these industry sectors is based on the NACE classification³ of the debtors and is not hard-coded in the implementation. Currently, for our test purposes we have defined four risk sectors on the basis of the NACE code: basic industries; production, trading and other services; public services; and a residual sector. Since only loans above the threshold volume are reported to the Major Loans Register, we assign the loans below this threshold to the residual sector. Nondomestic loans have to be assigned to the residual sector because of a lack of information about the respective industry affiliation.

The probability of default of an individual loan depends on the rating which the bank assigns to the respective customer and the default frequency of the industry sector the customer belongs to. The bank's rating is reported to the Major Loans Register and is mapped onto a master scale within the OeNB, which makes it possible to assign a probability of default to each loan. The default frequency data are from the KSV. The KSV database provides us with time series of insolvencies and the total number of firms in most NACE branches at a quarterly frequency. This allows us to calculate a time se-

ries of historically observed default frequencies for our industry sectors. To construct insolvency statistics for the residual sector, for which no reliable information on the number of insolvencies and the total number of firms is available, we take averages from the data that are available.

3 Description of the Model

The CreditRisk⁺ model is an actuarial model for aggregating risks in a credit portfolio with only little data about the obligors, a situation quite common for regulators. It was introduced by Credit Suisse First Boston and it is broadly accepted as a portfolio credit risk model. The main input data needed are expected default probabilities and exposures. Furthermore, one or more independent risk factors are introduced in the basic model. These risk factors scale the expected default probabilities randomly and should reflect changes in obligors' creditworthiness. The distribution of the risk factors is assumed to be a gamma distribution with expectation one and variance σ_k varying over risk factors 1 to K. The risk of a single obligor can depend on more than only one risk factor, which is represented by weights measuring the risk affiliation of obligors to specific risk factors. In order to facilitate calculations and to make analytical expressions possible, the distribution of the number of defaults conditional on the realization of the risk factor (i.e. for fixed risk factors) is approximated by a Poisson distribution. The distribution of the number of defaults, finally, turns out to be the convolution of K negative binomial distributions

³ NACE: *Nomenclature statistique des Activités économiques dans la Communauté Européenne – Statistical classification of economic activities in the European Community.*

arising from the mixing of the conditional Poisson distribution with the gamma distribution of the risk factors. Furthermore, the classical model only allows for fixed losses given default, which are rounded to multiples of a common loss unit in order to reduce the number of calculations needed for the evaluation. Finally, all the data can be aggregated in a probability-generating function of the total loss, out of which a recursive, numerically stable algorithm calculates the distribution of the total loss (see Haaf et al., 2004).

3.1 The Single Factor Model Currently in Use

The model currently in use for the off-site analysis of banks assumes that all stochastic changes of the default rates are driven by a single risk factor. This implies that economic booms and recessions affect all obligors equally. Mathematically, these model assumptions lead to relatively high covariances that probably overestimate the true dependencies of defaults. Losses given default are assumed to be deterministic (a fixed ratio of the exposure).

3.2 The Extended K-Factor Model

Various extensions of the model have been considered. A first step was to implement a model featuring various risk factors. Risk affiliations can be set such that obligors depend on various risk factors. This way of modeling results in diversification effects that lower measures of extreme events, such as VaR. In practice, groups of industry sectors are modeled to depend on one risk factor for each group. This leads to zero covariance between the groups and relatively high covariance within groups. Modeling a certain degree of depen-

dence between groups requires models of dependent risk factors.

3.2.1 Modeling of Dependencies

Dependencies between risk factors are modeled in two ways, as proposed in an article by Giese (1996).

In the hidden gamma model, the risk factors depend on a common random variable, which we will also call a risk factor. A certain degree of dependence can be introduced in this way. The possibilities of changing the magnitude of dependence and the flexibility of the dependence structure are limited.

An additional random variable that scales the distributional parameters of the risk factors is introduced into the compound gamma model. The variance of the random variable induces a covariance of the risk factors and thereby dependencies between the defaults. It is clear that this single additional parameter, which can only take values in a certain range, will not be sufficient to model an arbitrary covariance structure.

Nevertheless, it is possible to model various degrees of dependence of risk factors between the extremes represented by the single factor model and the K-factor model with independence.

3.2.2 Stochastic Loss Given Default

Assuming independence between losses given default and all other random variables (including risk factors) makes it possible to extend the model in such a way that stochastic losses given default could be integrated. Different loss given default distributions depending on the risk affiliations can be modeled and thereby help to improve the model. Furthermore, using stochastic loss given default allows for stochastic round-

ing, a method significantly reducing the errors arising when rounding the individual exposures to the multiples of a common loss unit.

3.2.3 Risk Contributions

The Expected Shortfall (ES) risk measure was considered in addition to Value-at-Risk (VaR); see Acerbi and Tasche, 2002). Algorithms were implemented that precisely calculated contributions to ES by obligors or subportfolios. A detailed analysis of the portfolio composition based on a coherent risk measure is now possible.

4 Calibration⁴

We use data from the Austrian rating agency KSV for the calibration. These data consist of defaults reported quarterly and grouped by industry sectors. In a first step, we calculate default numbers on a yearly basis. Then we assign all domestic loans to three generic risk sectors. For nondomestic loans and all other loans without industry sector information, we introduce a residual sector. As no reliable information on the number of insolvencies and the total number of firms for the residual sector is available, we are not able to calibrate its variance and assume it to be equal to the highest of the other three sector variances.

The defaults of each industry sector are assumed to depend on one risk factor. In the calibration process, the parameter of the resulting distribution (negative binomial or Poisson) is estimated for each of the three industry sectors. In a first approach, these risk factors and thereby the defaults in different industry sectors are assumed to be independent.

4.1 Theoretical Background

4.1.1 Negative Binomial Distribution vs. Poisson Distribution

A negative binomial distribution with an expected value modeled to depend on the total number of companies registered in a given period is fitted to the data of yearly defaults. In this model the expected number of defaults in period i is given by $E[N_i]=\lambda T_i$. The variance of defaults in year i is given by $V[N_i]=\lambda T_i(1+\sigma^2\lambda T_i)$. For σ^2 equal to zero this corresponds to a Poisson distribution with expectation and variance given by $E[N_i]=V[N_i]=\lambda T_i$.

Each risk sector is analyzed in order to decide whether to use a Poisson or a negative binomial distribution. This is done by a test for overdispersion that uses the likelihood function.

4.1.2 The Likelihood Function

The likelihood function is defined as the product of the respective probability function evaluated at the realizations of the random variable. In the Poisson case this would be

$$L(N_1, \dots, N_n; \lambda) = \prod_{i=1}^n \frac{(\lambda T_i)^{N_i}}{N_i!} e^{-\lambda T_i}.$$

Under the assumption of independence of defaults in different periods, this results in the joint probability of the observed values given a Poisson distribution with the parameter λT_i in year i .

For the negative binomial distribution this corresponds to

$$\begin{aligned} L(N_1, \dots, N_n; \lambda, \sigma^2) &= \\ &= \prod_{i=1}^n \frac{\Gamma(N_i + \frac{1}{\sigma^2})}{N_i! \Gamma(\frac{1}{\sigma^2})} \left(\frac{1}{1 + \lambda T_i \sigma^2} \right)^{\frac{1}{\sigma^2}} \left(\frac{\lambda T_i \sigma^2}{1 + \lambda T_i \sigma^2} \right)^{N_i}. \end{aligned}$$

⁴ Because of space constraints it was not possible to describe the calibration approach in more detail. Please contact the authors for additional information about the technical details.

It is obvious that the likelihood function of the Poisson distribution is easier to handle than the one of the negative binomial distribution. The parameters λ and σ^2 are chosen such that the likelihood of the given data is maximized.

4.1.3 Test of Overdispersion

A distribution whose variance exceeds its expectation is called overdispersed. The classical example of a distribution which is not overdispersed is the Poisson distribution where $E[N_i]=V[N_i]=\lambda T_i$, and an example of overdispersion is the negative binomial distribution where $V[N_i]=\lambda T_i(1+\sigma^2\lambda T_i)$, which is strictly greater than $E[N_i]$ if σ^2 is strictly greater than zero.

One test for overdispersion is the likelihood ratio test. The statistic is defined as

$$lr = -2\log\left(\frac{L^+}{L}\right),$$

where L^+ is the likelihood of the data under the hypothesis of Poisson distribution (using the parameter λ that maximizes this expression) and L is the likelihood under the hypothesis of negative binomial distribution (with the parameters maximizing the likelihood). The null hypothesis is the Poisson distribution, and it is rejected with a given level of significance α if the calculated value of lr exceeds the $1-\alpha$ quantile of the chi-square distribution with one degree of freedom. With this test we are able to detect whether the defaults in the sectors defined are significantly overdispersed.

On the other hand, the result of such a test can be reported using p values, where p is the probability of an occurrence of a more significant result (here: an unusual result under the null hypothesis). This is $p=P[\chi^2 > lr]$, where χ^2 has chi-square

distribution with one degree of freedom. Small values of p support the alternative hypothesis (namely a negative binomial distribution), whereas relatively big values (greater than 10%) support the null hypothesis of a Poisson distribution.

4.1.4 Point Estimates

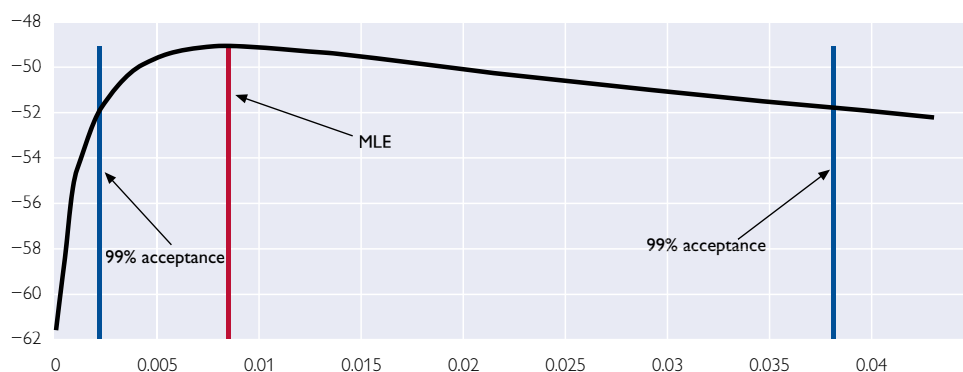
We use parameters that maximize the likelihood function as a point estimator for the parameters. These parameters are called maximum likelihood estimators (MLEs). First proper moment estimators are calculated using methods described in Mack (2002). This task is more complicated in a situation with varying numbers of registered firms than in a situation with a fixed number of firms. The likelihood is maximized numerically using these moment estimators as starting values.

4.1.5 Confidence Intervals Based on the Normal Distribution

An MLE has the desirable property of being asymptotically unbiased, and the asymptotic distribution is a normal distribution. The variance of the arising normal distribution is the inverse of the Fisher information. This quantity is usually hard to calculate, but as described in Panjer and Willmot (1992), we use the observed information to calculate the asymptotic variance. An interval with a given level of confidence can then be calculated. As the sample is very small, the intervals are relatively wide and the lower interval bounds of non-negative parameters even are calculated to be negative. The results have to be interpreted with caution, as the normality assumption holds asymptotically but not necessarily in a small sample.

Chart 1

Acceptance Interval for Maximum Likelihood Estimators (MLEs)



Source: Own calculations.

4.1.6 Confidence Intervals Based on the Likelihood Ratio Statistic

Another procedure to calculate intervals in which the true parameter is supposed to lie with a given probability is to choose the interval ends such that a likelihood ratio test with a given significance is still accepted. We numerically calculate values for σ^2 lower (σ_l^2) and higher (σ_u^2) than the MLE such that a likelihood ratio test with level of significance p is still accepted under the null hypothesis which postulates that σ_l^2 resp. σ_u^2 is the true parameter against the alternative of the MLE. For a confidence level of $\gamma=1-\alpha$ the significance of the test is chosen to be $p=\frac{\alpha}{2}$ corresponding to interval ends such that the true parameter lies within with probability γ (e.g. 99%). These intervals have the satisfactory properties of avoiding negative values, and they are asymmetric around the MLE corresponding to the speed at which the likelihood decreases.

Chart 1 plots the logarithm of the likelihood of a sample of defaults for varying values of σ^2 . The estimator for which the log likelihood attains its maximum is indicated, and the values passing a likelihood ratio test of level

of significance of 0.5% with the greatest distance to this MLE are indicated as well.

4.2 Effects of Different Calibrations

As the compound gamma distribution can be said to have a more convenient covariance structure than the hidden gamma distribution, and to save space, we present the results of our investigations only for the case of the compound gamma model.

We use a test portfolio consisting of all nondefaulted loans of the Major Loans Register as of December 2005. Every obligor is assigned to only one of four risk sectors (basic industries; production, trading and other services; public services; and a residual sector), as already mentioned before, are defined on the basis of the NACE code. The master scale probability of default is taken as the obligor's probability of default. A loss given default of 0% is assumed for the loan fraction covered by collateral and of 100% for the remaining loan fraction.

Table 1 presents effects of different VaR and ES calibrations for different confidence levels. First, the single factor model results are quoted for

Table 1

Effects of Different Parameter Calibrations on Loss								
Model	Risk factor variances	Correlation parameter σ^2	ES 95%	ES 99%	ES 99.9%	VaR 95%	VaR 99%	VaR 99.9%
One factor	0.015		4,590	5,085	5,753	4,270	4,787	5,471
	0.250		7,703	9,569	12,070	6,498	8,447	11,013
Four factors Variation of sector variance	MLE	0.002	4,332	4,783	5,414	4,051	4,503	5,149
	confidence level 99%	0.002	4,436	4,899	5,540	4,142	4,615	5,269
	acceptance level 99%	0.002	4,496	4,970	5,618	4,193	4,682	5,343
	all equal to 0.25	0.002	5,994	7,055	8,452	5,301	6,422	7,866
Four factors Variation of correlation coefficient	all equal to 0.25	0.000	5,979	7,037	8,432	5,289	6,406	7,846
	all equal to 0.25	0.002	5,994	7,055	8,452	5,301	6,422	7,866
	all equal to 0.25	0.019	6,099	7,186	8,607	5,387	6,541	8,013
	all equal to 0.25	0.250	7,703	9,569	12,070	6,498	8,447	11,013

Source: Own calculations.

Note: ES stands for Expected Shortfall, VaR stands for Value-at-Risk; MLE stands for maximum likelihood estimator.

Compound gamma model used in the four-factor case. Loss in billions.

MLE for the four sector variances (0.0086, 0.0047, 0.0023, 0.0086).

99% confidence level for MLE: (0.0270, 0.0134, 0.0150, 0.0270), and 99% acceptance level for MLE: (0.0381, 0.0186, 0.0188, 0.0381).

two different sector variances. Subsequently, figures for a four-factor compound gamma model are given first for different sector variances and then for different correlation parameters.

Until recently a lack of data prevented us from validating our VaR

model. We tried to avoid underestimating correlation risk and used a relatively high risk factor variance for the single risk factor of 0.25.

New data have helped us develop a better and more flexible model, which can be validated (as will be de-

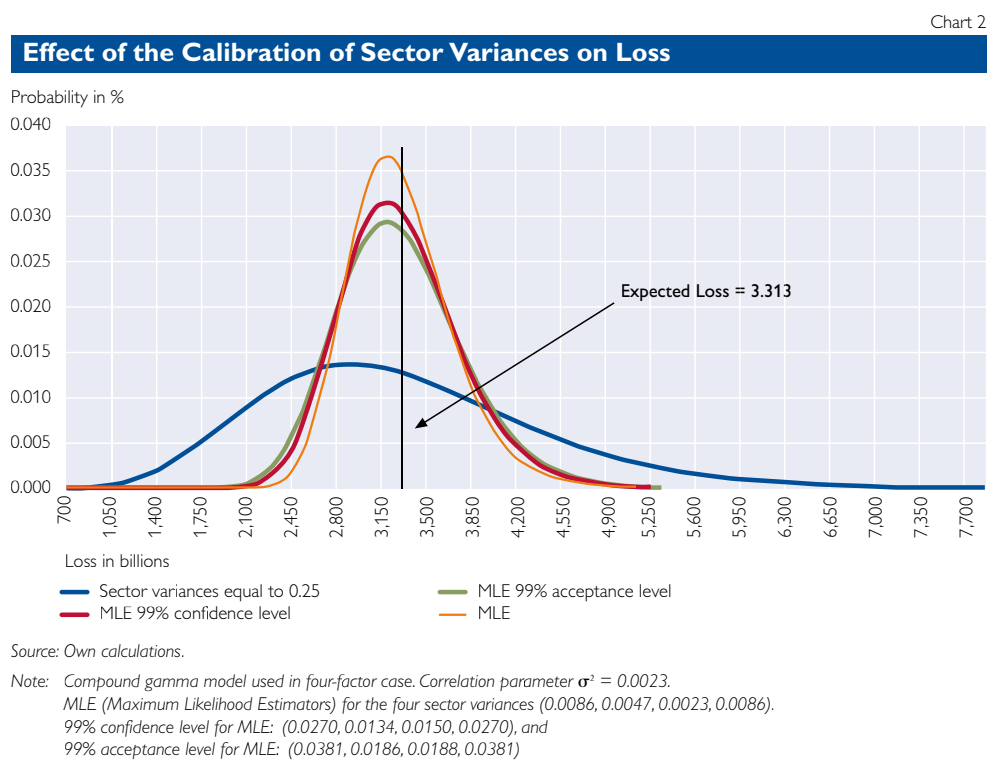
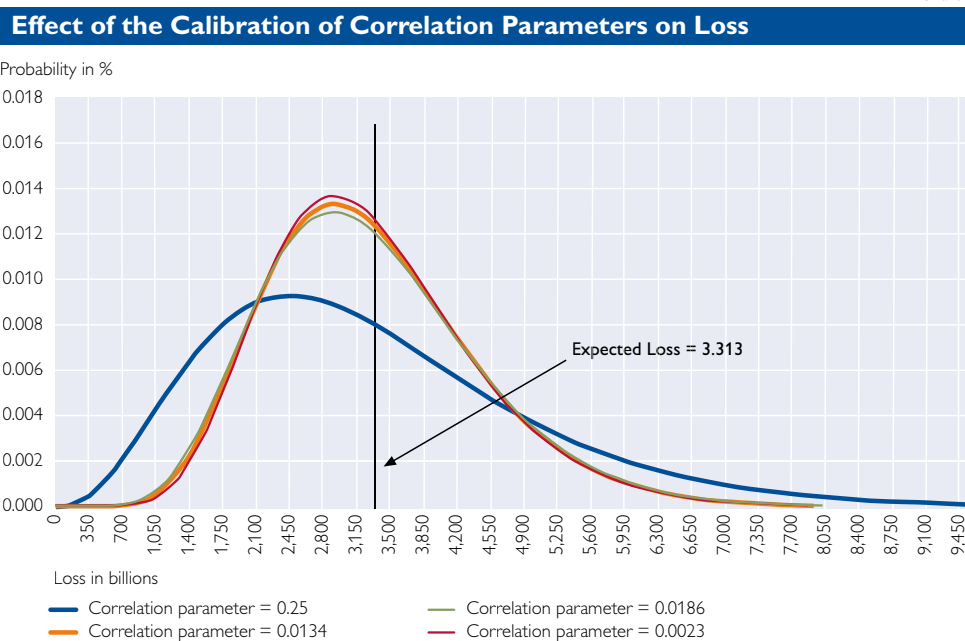


Chart 3



Source: Own calculations.

Note: Compound gamma model used in calculations (correlation parameter σ^2). All sector variances equal to 0.25.

scribed in section 5). This will allow us to choose a less conservative and hence a more realistic parameter calibration, which will deliver more precise results.

Clearly, higher risk factor variances lead to higher losses. Higher correlations do so as well, but in a less pronounced way. The single factor model and the four-factor model with equal factor variances and a maximum possible correlation produce the same results. This may be surprising at first glance, but these models are mathematically equivalent.

Chart 2 shows the histograms of credit loss in billions with various calibration methods for the variances of the risk factors. A 99% confidence interval resulting from the normal distribution was calculated, as was a 99% acceptance interval from a likelihood ratio statistic.

Chart 3 presents the loss probability functions for different values of the covariance parameter σ^2 . Higher

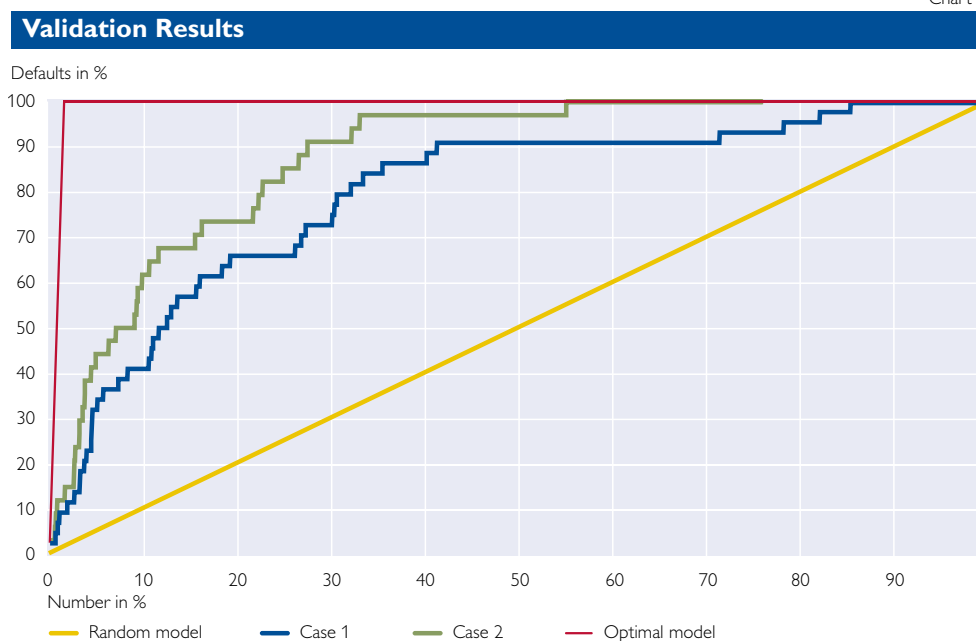
values for σ^2 obviously lead to heavier-tailed loss distribution.

5 Validation

For validating purposes we use the power curve and the accuracy ratio (AR) concept. The reliability of the AR method is not always guaranteed, as our validation sample contains only a relatively small number of defaults. Nevertheless, the calculated AR gives an indication of the model's power and is a measure of how well it discriminates between defaulting (bad) and nondefaulting (good) banks (see Engelmann et al., 2003). The AR combines the discriminatory power of the model for every possible cutoff rate in one number, which varies between 0 (for a random model) and 1 (for a perfect model).

For our testing purposes, we calculated the ratio of a single bank's credit VaR at the 95% confidence level and related it to the bank's capacity to cover losses as measured by

Chart 4



Source: Own calculations.

its available capital reserves and excess equity. We did this for all banks and all quarters of 2003 (no data are available to calculate results further back). Then we compared our results with the list of banks which actually experienced problems during 2004.

Chart 4 presents the cumulative accuracy profiles for two test cases. The first case describes the discriminatory power of the model when all banks are taken into account. In this case, an AR of 60.5% could be achieved. The second case relates to credit institutions for which more than 50% of the total loan volume is covered by the Major Loans Register. The test reveals that in this second case, significant power improvements could be achieved. An AR of 69.6% was even obtained.

The reason for the better performance in the second case is the fact that very little data are available for small-scale loans which do not have to be reported to the major loan register. The lack of essential informa-

tion about the individual loan amount, the probability of default and collateral value makes it impossible for us to gain insights into the potential riskiness of portfolios consisting mainly of such loans.

Our validation results are a good example that more detailed data on portfolio exposures will contribute to the improvement of the model performance. But starting with 2008, banks will be obliged to report more detailed data on loans below the Major Loans Register threshold and will provide more detailed data on obligors' collateral type. This additional information is expected to increase our model's discriminatory power even more.

6 Conclusion

We have been able to calculate the loss distribution for a more realistic factor distribution than that of a single factor model while remaining within the analytical framework. The possibility of calculating a single obli-

gor's risk contributions allows us to obtain important information about the main single risk drivers. Incorporating stochastic loss given default rates into the model accounts for the uncertainty caused by handling collaterals. All these results can be obtained with a relatively low computational effort within several minutes, even for very large portfolios.

Further investigation should be made to extend the framework to a general approach in a way that allows

for less constrained and hence economically more adequate modeling of risk factor dependencies, and also for more flexible calibration methods. The economic implications of different dependency estimations should be studied in more detail, and more reliable validation results are needed. In an even more realistic model, we would want to consider dependencies also among recovery rate categories and among severity and default risk.

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Austrian Banks' Lending and Loan Pricing Strategies against the Background of Basel II

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Although the New Basel Capital Accord (Basel II) makes no direct reference to loan pricing and lending terms, it is widely held that Basel II does, in fact, impact on loan pricing. A survey among Austrian banks on loan pricing strategies after Basel II aimed to identify the potential effects of Basel II on loan pricing. This article summarizes and analyzes the results of this survey and their implications for the Austrian lending business. The survey found a significant trend toward risk-adequate pricing. While it is impossible to predict at this point whether banks will eventually successfully implement this strategy, given the competitive environment, it seems that they are in fact resolved to do. Banks' loan pricing and portfolio streamlining plans concern mostly lending to small and medium-sized enterprises (SMEs), which in credit institutions' view offers the largest room for maneuver to adjust lending volumes and prices.

JEL classification: G21, L22, D4

Keywords: Basel II, banks, lending, loan pricing

Introduction

A range of analyses and studies on the implications of the New Basel Capital Accord (Basel II) in the national and international context have been published over the past few years. One of the issues which have so far not been thoroughly analyzed is the question of whether Basel II may bring about changes in loan pricing. Although the new capital adequacy framework does not contain any provisions on lending terms and loan pricing, it has been widely assumed that Basel II may lead not only to a credit crunch but also to more restrictive pricing, which means that loan prices could vary depending on a borrower's risk exposure. After all, Basel II supports the introduction and use of rating models that would provide the basis for such risk-adequate pricing.

If these expectations prove true, banking systems like the Austrian

may see a break with traditional lending strategies. Both the financial system and the structure of the real economy in Austria are characterized by a number of specific features, including a strong reliance on long-term relationship banking, the large number of small and medium-sized enterprises (SMEs) and the – by international standards – important role of bank loans in corporate finance (see Dirschmid and Waschiczek, 2005). In particular, the type of long-term relationship banking strongly established in Austria (and also in countries like Germany and Japan; see Schöning, 2004; Jung and Strohhecker, 2006) seems to some extent not be exactly compatible with ratings-based risk-adequate pricing. One of the key features of long-term relationship banking is that banks usually provide finance to customers over the business cycle, i.e. they give

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out loans also in economically difficult times, when their customers' risk of default is higher. This lending policy has a long tradition in Austria; it is rooted in part in the industry and structural policy role banks played in the post-1945 period (see Wössner, 1969; Tichy, 1975; Beer and Ederer, 1987; Kaufmann, 2001; Valderrama, 2001). On the one hand, it was up to the big banks like Länderbank and Creditanstalt to provide capital to key national companies, often regardless of whether there was real profit in a lending transaction or not. Moreover, not a few banks held participating interests in these companies and thus had a fundamental interest in keeping them operable. On the other hand, smaller credit institutions, such as regional savings banks, were expected to provide households and local businesses, sometimes located in economically disadvantaged regions, with access to finance. Risk assessment did not play a major role in loan pricing for either type of bank.

However, as other parts of the financial market gained relevance (derivatives markets, stock trading, etc.), identifying, measuring and managing risk also became more important, and Austrian banks have embraced this development (see Datschetzky et al., 2003). At the same time, regulators have promoted the use and improvement of – in particular quantitative – risk measurement procedures by providing the appropriate legal framework (Market Risk Directive of 1996, Basel II). Basel II broadly recognizes internal risk measurement methods, allowing banks to use their own rating models under the internal

ratings-based (IRB) approaches to calculate their risk and the resulting regulatory capital requirements. At the same time, banks opting for the standardized approach and using external ratings are encouraged under pillar 2 of the new capital adequacy framework to quantify all relevant risks, which implies that even those banks need to carry out a more accurate assessment of their risk exposure than previously. This paper investigates whether changes in banks' and supervisors' treatment of risk may bring about changes in lending procedures, in particular in lending terms and pricing.

Method and Design of the Survey²

Between December 2005 and February 2006, a total of 25 banks doing business in Austria were surveyed by individual interviews on the basis of a standardized questionnaire. The representative sample was compiled to both reflect the Austrian banking sector's diverse scale and organization as well as to cover as thoroughly as possible the population of all Austrian banks. While this procedure ensures almost full coverage of all larger universal banks and thus the respective market volume, conclusions about the remaining volume must be drawn from sub-samples. In terms of unconsolidated total assets the survey sample covers a total of 61.3% of the Austrian banking sector. The quantitative evaluation of the data was carried out both for the entire sample and for individual size and type categories. A differentiation was made between special-purpose banks, major universal banks as well as medium-sized and

² The complete survey is published at <http://basel2.fh-vie.at/publikationen.aspx?catId=4> (see also Jäger, 2006).

small banks. Standardized questioning was preceded by an explorative stage during which depth interviews were conducted with selected banks to identify, in line with the methodological guidelines of interpretative social research (see Froschauer and Lueger, 1992; Lamnek, 2005), questions, issues and interlinkages which would have been impossible to deduce on the basis of the available data and literature alone.

The Status Quo in Loan Pricing: Only Major Banks Apply Refined Calculation Methods

Currently Used Pricing Strategies

The banks surveyed were first questioned about the information and methods they currently use to calculate loan prices. This is a key prerequisite for assessing potentially varying pricing strategies and the possible implications of Basel II.

The large majority of responding banks reported a calculation method which included the calculation of minimum margins for loans. Some banks, all of them small or medium-sized credit institutions, however, apply a very simple calculation scheme.

On the basis of the standard models for loan pricing as described in the banking literature (see Rolfes and Bannert, 2001; Schierenbeck, 2003a and 2003b; Schöning, 2004), respondents were asked about the components of their loan cost schemes. The literature usually distinguishes between standard risk costs, cost of capital, liquidity or refinancing costs as well as unit costs.

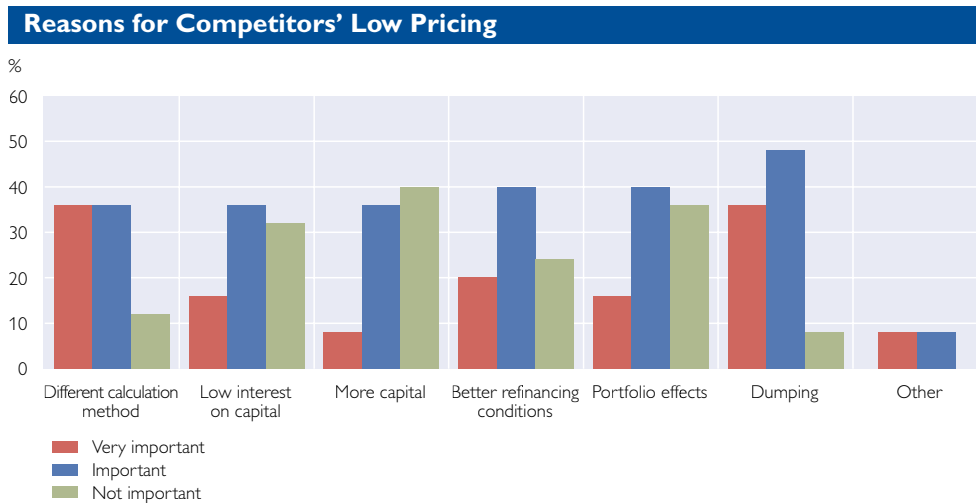
Basel II may – directly or indirectly – cause changes in particular in the calculation of standard risk costs and cost of capital, since such calculations take into account banks' rating

approach as well as the quality and nature of the model used for assessing customers' creditworthiness. Similarly, these cost components are influenced by the collateral chosen, the recognition of which has been redefined by Basel II.

At present, banks usually calculate standard risk costs in line with the insurance principle on the basis of their past default experience. This procedure involves the calculation of probabilities of default (PDs) derived from the credit institution's own experience that provide the basis for the standard risk costs. PDs calculated on the basis of external prices (e.g. market prices or bond spreads) are virtually never used as the basis for the calculation of standard risk costs. Some banks apply PD mapping, i.e. assigning the calculated PD of individual customers to rating categories, which is a key method for estimating standard risk costs. Usually, banks determine standard risk costs broken down by rating or by rating and maturity. The survey has shown that large or more specialized banks tend to use a more refined approach than small and medium-sized credit institutions.

To assess the possible implications of changes in the cost of capital for lending terms, the banks were also questioned about the return requirements for earmarked capital and for the calculated cost of capital. Most banks reported that they targeted a return on equity (ROE) of 6% to 10% before tax, only large and specialized credit institutions often target a higher ROE. These values, however, should be treated with caution, since the interviews showed that in many cases, margin calculations do not include the total targeted ROE. Still, it has become obvious that the cost of capital plays a key role in cost

Chart 1



Source: Fachhochschule des bfi Wien.

Note: In charts 1 to 8 some figures may not add up to 100% because not all banks answered all questions.

accounting, which is also due to the capital requirements as set out in Basel II to a significant extent influencing the amount of capital that banks hold.

Whether the calculation of standard risk costs and the cost of capital has changed in the course of preparing for Basel II also seems to depend on a bank's size: especially small credit institutions reported that there had been no changes so far.

Cost accounting is an important, but not the only basis for pricing strategies. Therefore, loan prices do not necessarily correspond exactly to lending costs. Other factors, e.g. market conditions, also impact on pricing policies. Asked why competing lenders are able to offer more favorable terms, most banks mentioned different calculation schemes or dumping, whereas more capital is not believed to play a major role (see chart 1).

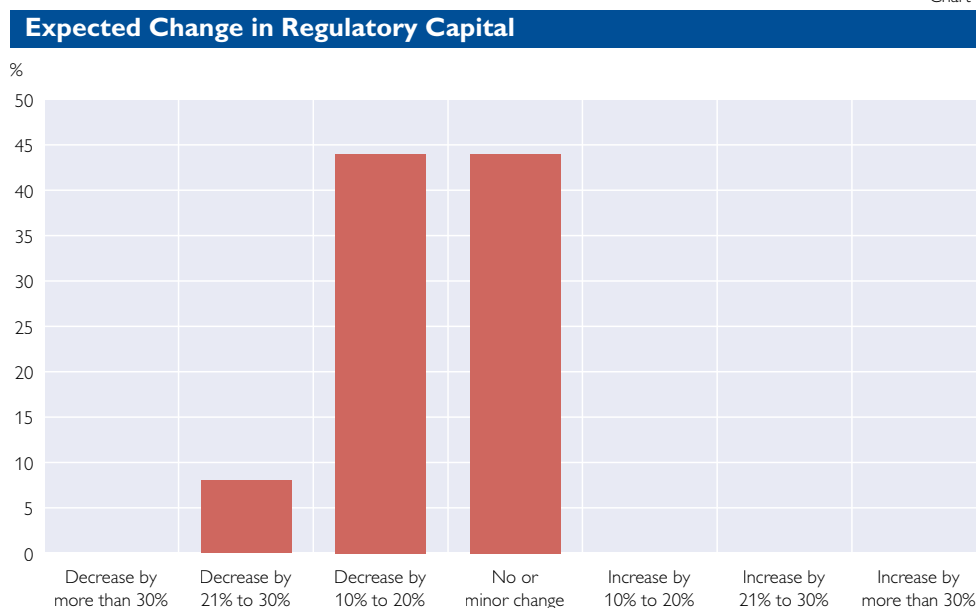
Overall, the survey has shown that most Austrian banks apply calculation methods that can provide at least some basis for risk-adequate pricing. In addition, a substantial proportion of respondent banks reported

considerable changes in cost accounting over the past few years. There are, however, major differences depending on bank size: While several, in particular large credit institutions started to introduce more accurate calculation methods already a few years ago, the majority of small and medium-sized banks has hardly made any changes up to now. Yet, the latter claim to be working on refining their calculation schemes already or plan to do so in the near future. This shows that the implementation of Basel II has prompted many banks to adapt their cost accounting procedures to create or improve the basis for risk-adequate pricing strategies.

The Future of Loan Pricing

Before taking a closer look at future loan pricing strategies, the issue of whether the calculation of regulatory capital as set out in Basel II does in fact have an impact on banks' capital needs to be clarified. Capital requirements are a key (restrictive) factor in lending. According to the results of the Quantitative Impact Studies conducted by the Basel Committee on

Chart 2



Source: Fachhochschule des bfi Wien.

Banking Supervision (BCBS), Basel II should lead to a lower aggregate level of minimum capital requirements compared with Basel I, even if the scaling factor of 1.06 is taken into account, whose application should prevent a sharp drop in minimum capital requirements (see BCBS, 2003; BCBS, 2006). The survey showed that the majority of respondent banks expects aggregate minimum capital requirements after the implementation of Basel II to remain more or less unchanged or to decrease by up to 20% (see chart 2). A disaggregated analysis reveals that large banks tend to anticipate lower capital requirements, whereas small and medium-sized banks assume that there will be no substantial changes.

Banks Plan to Adapt Loan Price Calculations

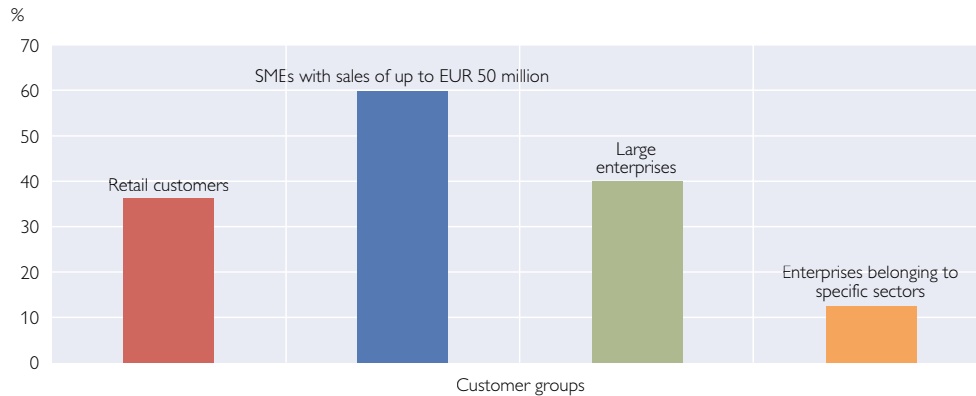
Regardless of possible changes to minimum capital requirements, the large majority of banks is planning to modify their calculation schemes for standard risk costs and for the cost of

capital, giving (at least a little) more weight to expected risk and economic capital. Large banks in particular announced that they would make major adjustments, while small and medium-sized banks intend to implement changes on a smaller scale.

This, in turn, raises the question whether more accurate risk calculation leads to adjustments in pricing. There have been growing signs that in addition to adaptations of price calculations at the micro level, there may also be changes at the aggregate level. The fact that risk premia on riskier loans have increased corresponds to the results of the Oesterreichische Nationalbank's regular bank lending survey of the past few years, which indicate that margins on riskier loans have been tightened somewhat (see Waschiczek, 2006). These changes have affected first and foremost small and medium-sized enterprises with sales of up to EUR 50 million, but also larger enterprises and retail customers (see chart 3). Most banks argue that this development confirms

Chart 3

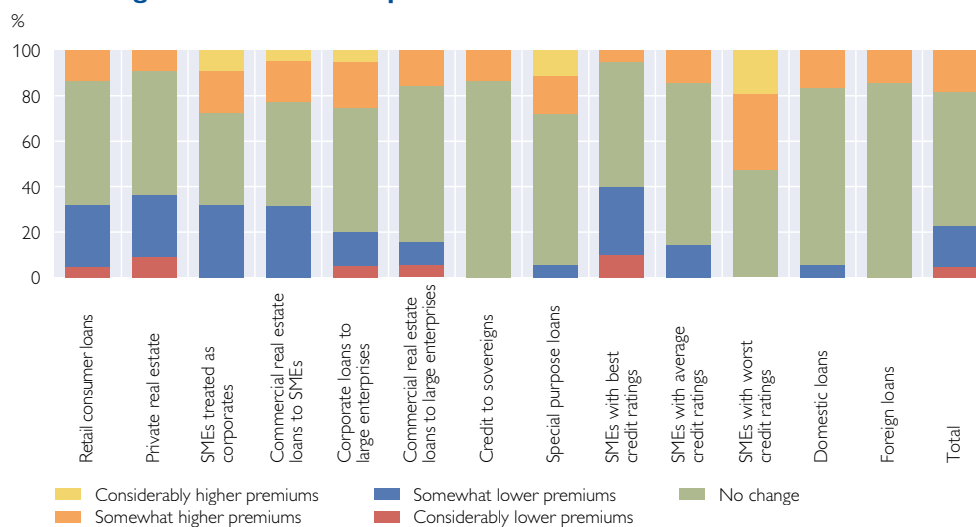
Customer Groups Likely to Be Affected by New Pricing Strategies



Source: Fachhochschule des bfi Wien.

Chart 4

**Potential Change in Calculated Premiums on Loan Costs
 according to Customer Groups**



Source: Fachhochschule des bfi Wien.

that pricing strategies have already become more risk-adequate owing to changing market conditions and the upcoming implementation of Basel II.

Accordingly, the majority of banks in the survey indicated that for them risk-adequate pricing will play a (somewhat or considerably) bigger role in the future. Still, a few credit institutions responded that they did not expect risk-adequate pricing to gain in importance, and one bank

even claimed that its role would diminish. All in all, however, there is an ongoing trend toward increasingly risk-adequate pricing

Credit institutions were also asked which groups of borrowers would imply overall higher, unchanged or lower standard risk costs and cost of capital. As chart 4 illustrates, most borrowers will not feel any changes in calculated premiums or discounts on loans. A breakdown of SMEs by

credit profile shows that on average, the premiums on risk costs and the cost of capital will remain unchanged or shrink for a majority of businesses. SMEs with low credit ratings, however, will face notably higher premiums.

Implementation of Risk-Adequate Prices Depends Strongly on Market Acceptance

The implementation of risk-adequate pricing requires not only lenders to adjust supply structures but also borrowers to (correspondingly) change their demand behavior. Therefore, the surveyed banks were also questioned about customer acceptance of risk-adequate pricing. Apparently, banks believe that large corporate loan and real estate loan customers as well as those 25% of SMEs with the best credit ratings have some understanding for risk-adjusted prices, whereas retail consumer loan customers and the 25% of SMEs with the worst credit ratings have little tolerance for such a pricing strategy. Among “average” SMEs, there seems

to be a balance between those who have some understanding and those who have no understanding.

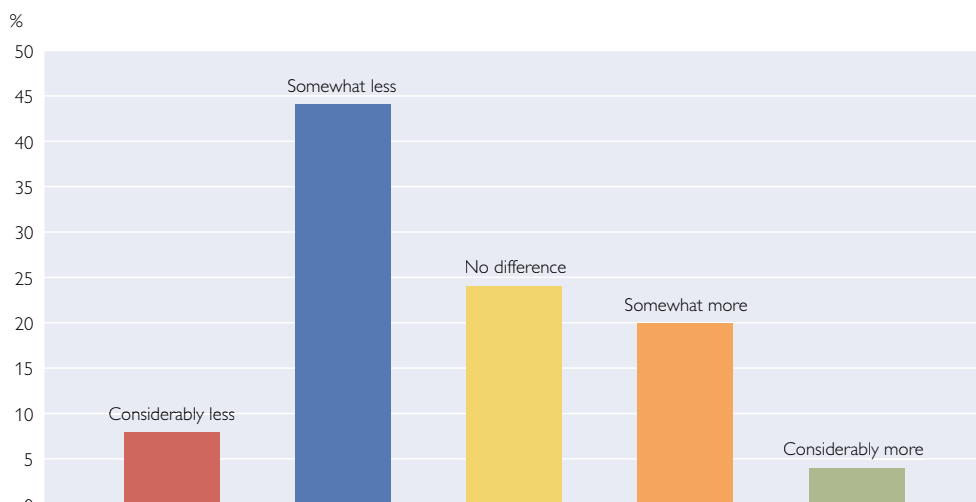
There is no agreement among banks as to whether risk-adequate prices will be more readily accepted by new or by existing customers, though a relative majority believes that existing customers may have more objections to such strategies than new customers (see chart 5).

As to the strategies available for introducing risk-adequate prices, banks consider all of them more or less important, in particular maintaining close customer relationships as well as informing customers about their ratings and, accordingly, ways to improve their ratings (see chart 6). This indicates that lenders are willing to provide more information, thus increasing transparency and contributing to higher acceptance by borrowers. Compared with large banks, small and medium-sized credit institutions tend to give more weight to close customer relationships.

In addition, the banks surveyed believe that whether new pricing

Chart 5

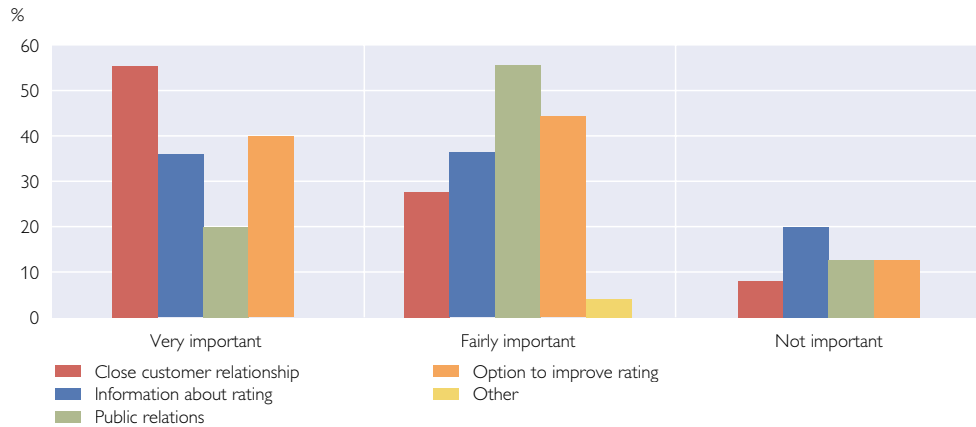
Acceptance of Risk-Adequate Pricing by Existing Customers Compared with New Customers



Source: Fachhochschule des bfi Wien.

Chart 6

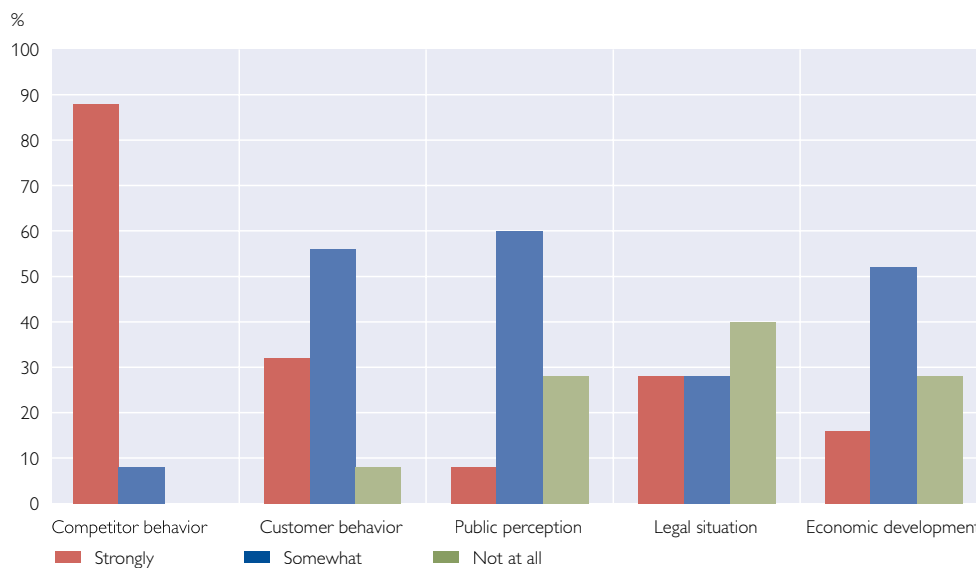
Importance of Strategies to Implement Risk-Adequate Pricing



Source: Fachhochschule des bfi Wien.

Chart 7

The Successful Implementation of Risk-Adequate Pricing Depends on ...



Source: Fachhochschule des bfi Wien.

strategies are met with acceptance strongly depends on competing lenders (see chart 7). Other factors, such as customer behavior and economic conditions, also seem to play at least some role. Banks' perception that their strategies are strongly dependent on other lenders, i.e. on market supply behavior, is a sign of competitive structures in banking. Since, however, all lenders broadly agree that risk-adequate pricing will gain in

importance, as the survey discussed here indicates, it can be assumed that the entire market will move in this direction and that market participants will adapt their products and services to meet the new requirements. Competitive pressure may even reduce the ability of individual market participants who do not have risk-adequate prices on their products to compete and may eventually force them to follow the general market trend.

Upgrading of Risk Management and Standardization of Lending

Switching to risk-adequate pricing may also entail some restructuring within banks as individual organizational units sometimes target different objectives. Therefore, the banks participating in the survey were questioned about current processes and procedures as well as changes in decision-making structures within their organization. The working hypothesis applied assumes that Basel II will prompt a reorganization of decision-making structures and in particular changes in the intra-institutional relationship between loan management and risk management.

Asked to what extent the role of risk management/controlling will change at their bank, the majority of respondents said that this area would become somewhat more or much more important. While larger banks, already having upgraded risk management over the past few years, expect this area to become only slightly more important, small and medium-sized banks believe that for them, the role of risk management will increase considerably.

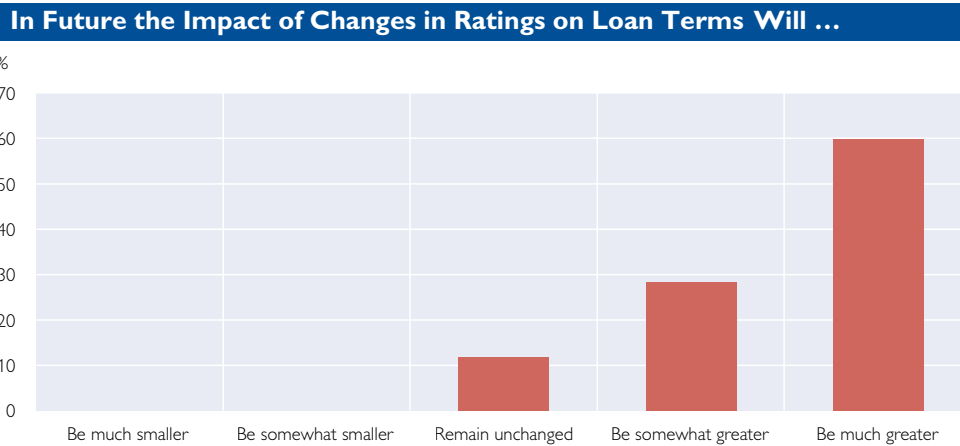
This shift may take place at the expense of loan management if lending becomes increasingly standardized and, as a consequence, the individual relationship between the loan manager and the loan customer becomes less important. For this reason banks were asked whether they were planning to move toward greater standardization in lending, i.e. applying uniform guidelines and standards, or toward greater flexibilization, i.e. applying different criteria and assessments depending on individual lending cases. The responses do not provide a clear picture: While the majority presumes that there will be some

or considerably more standardization and only few respondents do not see any changes, some banks indicated that they would pursue both more standardized and more flexible policies. Moreover, the qualitative evaluation of the interviews showed that more standardization is planned especially in areas where margins are comparatively low, for example in retail lending. By contrast, smaller and medium-sized banks said that they would increase flexibility in lending to SMEs. In general, large banks tend to opt for greater standardization, whereas medium-sized banks expect little change and small banks consider that not only standardization but to some extent also flexibilization will become more important.

Similarly, there is broad agreement that new loan contracts will increasingly incorporate clauses enabling the adjustment of lending terms to changes in ratings. 60% of responding banks even said that such clauses would play a much greater role, which highlights banks' intention to modify traditional interaction patterns with borrowers (see chart 8).

In connection with possible changes in decision-making structures, the banks surveyed were also asked how important it would be to be able to adjust lending terms in existing loan contracts if a customer's rating should change. There was almost unanimous agreement that this option would become somewhat or considerably more important; no bank expected the opposite. Banks' approaches to how such an adjustment of lending terms might be carried out in practice vary: one group said that it would act more flexibly, whereas the majority indicated that it would rely on more standardized procedures.

Chart 8



Source: Fachhochschule des bfi Wien.

All in all, the survey results on this topic do not provide a clear picture. It is impossible to deduce that the decision-making structures identified with the tradition of long-term customer-bank relationships will be abandoned. There are signs, however, that in particular large and some medium-sized banks will take certain measures, including, for instance, the adjustment of lending terms when a borrower's rating changes as well as more standardization, which will reduce flexibility in managing individual customer relationships. Many small banks and banks with a regional focus indicate that they would not abandon traditional relationship banking, arguing that since their business is less geared toward achieving a high ROE – thanks to, e.g., their cooperative structure – they can afford to support regional economic objectives and that maintaining close relationships with their customers is a competitive advantage rather than a one-way strategy. Furthermore, small credit institutions maintain that close and personal customer relationships in the regional context help keep the risk of default low, giving banks the

possibility of providing sound assessments of customers' creditworthiness on a broader basis.

Since Basel II closely links the capital requirements under the IRB approach to borrowers' credit ratings, it can be assumed that banks' treatment of borrowers whose creditworthiness deteriorates will change. The majority of the banks surveyed, especially larger banks, in fact indicated that in such cases they would resort to shrinking the proportion of such customers in their portfolios to a larger extent than previously. In particular, small and medium-sized banks reported that they would not only reduce the share of such customers but also strengthen their relationships with the remaining customers, which, they argue, may raise customer loyalty and thus impact positively on profitability in the long run. Besides, these banks apparently see themselves as more committed to regional and corporate responsibility. The majority of large banks, on the other hand, indicated that they would end business relations with customers whose credit ratings deteriorate earlier than now.

Summary and Conclusions

The analysis of the survey results shows that Basel II will bring about substantial changes in loan pricing, loan portfolio compositions and lending terms if banks implement the strategies announced in the survey interviews. Risk costs will increasingly be calculated on the basis of individual borrowers' risk. As a consequence, customers with good credit ratings will obtain loans at lower prices than those with poor ratings. Similarly, almost all banks surveyed announced that they would adjust the terms of existing loans if a borrowers' rating should change. All these measures are part of a trend towards risk-adequate pricing.

However, Basel II does not seem to be the sole reason for banks to modify their pricing strategies; operational considerations, market developments as well as expectations voiced by supervisors and other institutions or organizations (e.g. rating agencies) also contribute to an environment conducive to risk-adequate pricing. Since Basel II supports certain mechanisms in lending, such as the application of new risk measurement methods and ratings consistent with market conditions, it also acts as an accelerator and catalyst of lending strategies based on risk-adequate pricing and risk-based return calculation.

Whether the strategies envisaged by banks can in fact be implemented will depend not least on market conditions. At present, risk-based loan pricing is the exception rather than the rule in the Austrian market. Banks continue to extend some loans at terms that do not reflect total risk costs to be able to keep up with aggressive pricing behavior in a partly highly competitive market. In addition, many small and medium-sized

banks, which have always factored regional economic policy considerations into their lending and pricing strategies, said they would continue to do so. As a result, the Austrian loan market would continue to meet the heterogeneous demands of the Austrian business community with its predominance of SMEs despite the trend toward standardization supported by Basel II.

It is likely, therefore, that the Austrian lending business will not change all at once. Rather, there are signs that banks are going to pave the way for gradual modifications in the medium term. It remains to be seen whether risk-adequate pricing will be introduced quickly, but the ongoing discourse compels banks at least to some degree to explain to investors and savers, possibly even to supervisors, why their lending terms are not risk-adjusted, just as internationally operating banks will feel increased pressure to optimize their risk-to-return ratios. Furthermore, banks may demand higher collateral from borrowers; this aspect was not part of this analysis, though. The future increased tradability of loans may also impact on pricing strategies. Seeking to optimize the risk-to-return ratio, banks may review their loan portfolios to determine which borrowers do not yield a return that is in line with their riskiness. The threat of sanctions for such "suboptimal" customers would in turn increase pressure on borrowers to present themselves as low-risk customers long before the danger of their loan being removed from the bank's portfolio presents itself. Today, businesses are well aware of the fact that the implementation of Basel II will require them to improve the provision of documentation and information to their banks.

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Determinants of the Interest Rate Margins of Austrian Banks

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Markus S. Schwaiger¹

Bank interest rate margins have been declining in most EU Member States over the last decade. Drawing on a unique sample of supervisory data for the Austrian banking system from 1996 to 2005, this paper investigates the determinants of bank interest rate margins. The main factors driving the reduction of Austrian banks' interest rate margins are decreasing operating costs, the growing importance of foreign currency lending combined with a rising share of noninterest revenues as well as increasing competition. In contrast to findings in the literature we document a positive effect of relationship banking on margins, with the erosion of relationship banking being another reason for the decline in interest margins.

JEL classification: G21, E40, C33

Keywords: Interest rate margins, loan pricing, profitability

1 Introduction

All across the EU-25, many banking markets have seen a reduction in their interest rate margins (see e.g. ECB, 2006, for euro area banks). In fact a look at the Bureau van Dijk Bankscope Database reveals that only 5 out of 25 EU Member States (the Czech Republic, Greece, Hungary, Slovakia and the U.K.) have seen a stable or (slightly) increasing interest margin since 1999.² Austria is no exception in this regard. The interest rate margin of Austrian banks has decreased substantially over the last ten years.³ This paper investigates the major determinants of banks' interest rate margins in Austria and identifies the reasons behind the decrease of margins over the last decade.

With interest income still accounting for nearly one half of Austrian banks' operating income, the observed margin reduction is relevant

both from a micro (or single bank) perspective as well as from a macro (or financial stability) viewpoint. From a microeconomic perspective, identifying – and predicting the evolution of – the drivers behind decreasing margins should enable us to assess prospective changes in the margin reduction process. Regarding the financial stability aspect, the reduction of the interest rate margin is of double importance. On the one hand, bank managers may have an incentive to expand other, potentially more risky business activities in order to shore up profitability. On the other hand, from a monetary policy point of view, it is interesting for regulators to know whether the reduction in the interest rate margin (IRM) is predominantly attributable to microeconomic reasons or, quite contrarily, to macroeconomic developments.

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² Maudos and Fernández de Guevara (2004) furthermore document declining margins for a sample of five major EU Member States for the earlier period of 1993 to 2000.

³ Moreover, a look at the ECB interest rate statistics shows that the margins Austrian banks charge on new loans and deposits have been consistently lower than the average margin charged by euro area banks since the beginning of these statistics in 2003.

So far, the literature has documented a number of factors that affect the size of bank margins. Macroeconomically, the state of the business cycle (see e.g. Bikker and Hu, 2002), the term structure/volatility of interest rates (see e.g. Ho and Saunders, 1981), or the influence of judicial efficiency (Laeven and Majnoni, 2005), were shown to be important. In terms of micro (i.e. bank-specific or industry-specific) factors, operating costs (see e.g. Demirgüç-Kunt and Huizinga, 1998), interest rate risk (see Ho and Saunders, 1981), default risk (see Angbazo, 1997), bank size (see e.g. Athanasoglou et al., 2005), market structure/competition (collusion vs. efficiency hypothesis, see e.g. Goddard et al., 2004), or risk aversion (see e.g. Maudos and Fernández de Guevara, 2004) matter.

In this respect, the Austrian banking system itself has seen several noteworthy phenomena that accompanied the continuous reduction of the IRM over the last ten years. In line with a development seen in many other EU Member States, Austrian banks have witnessed a sharp rise in the importance of noninterest revenues. The median bank saw the share of noninterest revenues in operating revenues rise by more than 50% over the last decade. Besides the successful expansion to Central and Eastern European (CEE) banking markets, it is the rising dependence on commission income which drives noninterest revenues.

Furthermore, Austria is unique – at least within the euro area – with respect to the importance of foreign currency lending. Indeed, the share of foreign currency loans (FCL) in overall lending to nonbanks has more than tripled since 1996 to roughly

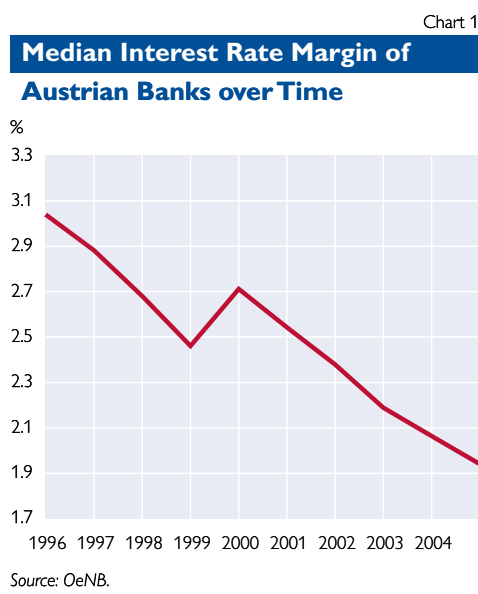
20% at present. Additionally, the Austrian banking system can still be characterized as a typical universal banking system with a strong emphasis on the German-style “Hausbank” principle (see e.g. Elsas, 2005). If relationship banking indeed drives up interest rate margins (see e.g. Boot, 2000, and Thakor, 2000), reduced margins could also be the consequence of a decrease in the importance of relationship banking in the past years.

In this paper we want to address the reasons behind the decline of Austrian banks’ IRM. Although other papers have dealt with the overall profitability of Austrian banks (see e.g. Arpa et al., 2001, Hahn, 2005a and 2005b, and Rossi et al., 2006) or included data on selected Austrian banks into a cross-country sample (see e.g. ECB, 2000 and 2006b), to the best of our knowledge, our paper is the first to address the determinants of Austrian banks’ interest rate margin in a comprehensive way. Based on the modeling approach by Maudos and Fernández de Guevara (2004) and the estimation of a dynamic panel data model, the decrease of Austrian banks’ IRM is found to be mainly attributable to decreasing operating costs, an increasing prominence of foreign currency lending accompanied by a rise in noninterest revenues as well as stronger competition. Adding to that, an erosion of relationship banking wears down interest rate margins further.

The following second section describes the development of the IRM in Austria over time. Section 3 outlines the underlying theoretical model, section 4 specifies the empirical application, section 5 presents our results, and section 6 concludes.

2 Bank Interest Rate Margins over Time

The median interest rate margin of the Austrian banking system (defined as net interest income over total assets) declined by more than 36% from 3.04% in 1996 to 1.94% in 2005 (see chart 1). It is noteworthy that the reduction in interest rate margins spanned the entire observation period and was not confined to any subperiod with a particular general economic condition such as the asset price boom years up to 2000. Furthermore, IRM reduction was not confined to any subgroup of banks (large or small, joint stock or cooperative, etc.), but occurred – at different speeds – across the entire banking system.



3 Determinants of Bank Interest Rate Margins

In this paper we employ the well-accepted dealership model in the line of Ho and Saunders (1981) to investigate the determinants of banks' interest rate margins. The original Ho and

Saunders model views banks as risk-averse intermediaries between lenders and borrowers. In this process, banks are exposed to competitive pressures and interest rate risk which determine their interest rate margins. The original model has been extended to include different kinds of loans/deposits (see Allen, 1988) and the volatility of money market interest rates (see McShane and Sharpe, 1985), credit risk (see Angbazo, 1997) and operating costs (see Maudos and Fernández de Guevara, 2004).

In the following, we apply the Maudos and Fernández de Guevara (2004) extension of the original Ho and Saunders model of IRM. Intuitively Maudos and Fernández de Guevara's model works in the following way: Banks are risk-averse agents that take deposits and grant loans, both of which arrive randomly, with the probability of arrival depending on the margin the bank charges and the elasticity of the demand for loans/supply of deposits. The random character of deposit supplies and loan demands exposes them to interest rate risk. Suppose a deposit is taken by a bank and invested in the money market for lack of concurrent loan demand. In such a case, the bank faces a reinvestment risk because of the stochastic nature of its investment return. But if an incoming loan demand is refinanced on the money market, the bank faces a refinancing risk because of the stochastic nature of its refinancing costs. Given that the return on said loan is uncertain (as it is uncertain in advance whether the loan is going to be repaid or not), the bank also faces credit risk – in addition to the interest rate risk mentioned above. A risk-averse agent therefore will demand a higher margin for higher credit risks. Maudos

and Fernández de Guevara (2004) argue that the intermediation role of banks is furthermore reflected in their operating costs since even in the absence of market power and of any kind of risk, banks will have to cover their operating costs, which are a function of deposits taken and loans granted. Thus banks operating at higher cost levels will need to charge higher margins. As in a perfectly competitive environment the prices are set by the market – a process which simply results in the market exit of banks with high expenses, some doubts about this line of argumentation are justified. We nevertheless include operating costs in our analysis, as higher costs may be the result of product differentiation due to higher service and/or higher marketing expenses and therefore enable a bank to charge higher interest rates for loans and offer lower interest rates for deposits. The model further predicts the IRM to be an increasing function of the average size of a bank's operations because in this case more risk is concentrated in a single customer.

To sum up, the theoretical model of Maudos and Fernández de Guevara (2004) lists the following determinants of a bank's IRM and their predicted directions of influence:

- A bank's degree of *risk aversion*: The higher the risk aversion, the higher the IRM.
- The *competitive structure* of the banking market: The lower competition, the higher the IRM.
- *Interest rate risks*: The more volatile money market rates, the higher reinvestment and refinancing risks, which in turn results in higher IRM for risk-averse agents.
- *Credit risks*: The higher credit risks, the higher the IRM.
- The *interaction* between credit and interest rate risks: Higher interest rate risks will ceteris paribus increase the default probability of loans.
- Bank's *operating costs*: The higher the operating costs, the higher the IRM a bank has to – or may – charge.
- The *average size* of bank operations: The higher the average size of operations, the higher the risk concentrated in single customers and the higher the IRM a risk-averse agent demands.

Literature refers to the IRM explained by these factors as the “pure” or model-based interest rate margin. From an empirical point of view, a number of other drivers reflecting market imperfections, bank specific components or macroeconomic influences might divert empirical interest rate margins from these “pure” margins. The *payment of implicit interest* in the form of loan- or deposit-related commissions obviously has to be considered in this context (see Saunders and Schumacher, 2000). Given a large dispersion in the relative size of banks and the degree of bank efficiency, it would not be surprising to see that *economies of scale* (see Athanoglou et al., 2005) or the *quality of management* (see Angbazo, 1997) have an effect on empirical margins. In the same way, the different extent to which banks make use of relationship banking in a market has been identified as a potential driving force behind bank margins (see e.g. Ergunçor, 2005). Stiroh (2004) furthermore documents interplay between noninterest and interest revenues that could hinge on *income diversification*. Last but not least, changing *general economic conditions* (see Bikker and Hu, 2002) could also wield an influ-

ence in this respect. In an empirical model of bank margins, these factors have to be captured, too.⁴

Thus, the observed interest rate margin of bank i at time t , IRM_{it} , is given by:

$$IRM_{it} = f[PIM_{it}(\bullet), X_{it}, Y_t]$$

where PIM_{it} is the pure interest rate margin, X_{it} is a vector of bank specific control variables and Y_t is a vector of industry-specific and macro control variables.

4 Empirical Approach

4.1 Data

Our original data set consists of year-end data of all 1,119 banks that held an Austrian banking license between 1996 and 2005. As not all of these banks operated throughout the whole period and as data are missing for some banks' variables, the final sample consists of 903 banks and covers 8,286 observations altogether. We draw on a unique data set based on banks' regulatory report to the Oesterreichische Nationalbank (OeNB) in accordance with the Austrian Banking Act.⁵ This data set has three major advantages compared to data used in similar studies: First, it includes all banks in the market, contrary to most other studies, which include only partial samples and exclude many small banks. Second, all the banks are subject to the same accounting and regulatory regime, which means that the potentially dis-

torting influence of differing accounting standards can be avoided. Third, the reporting data are far more detailed throughout the sample than in commercial databases, thus allowing us to find better suited empirical variables such as the average size of customer loans as a measure of the average size of (loans) operations, the Herfindahl-Hirschman index of a bank's loan portfolio as a measure of diversification and the share of small loans as a measure of the degree of relationship banking.

Daily interest rate data are derived from Thomson Financial Datastream, annual GDP data on Austria are again provided by the OeNB.

4.2 Empirical Model

To capture the persistence of bank profits over time that numerous other studies (e.g. Athanasoglou et al., 2005, Goddard et al., 2004) find to be attributable to e.g. impediments to competition or informational opacity, we perform a dynamic panel data approach, using the one-step GMM estimator introduced by Arellano and Bond (1991).⁶ Our empirical specification therefore takes the form

$$IRM_{it} = const + \delta IRM_{it-1} + \sum_{k=1}^K \alpha_k PIM_{kit} + \sum_{l=1}^L \beta_l X_{lit} + \sum_{m=1}^M \gamma_m Y_{mt} + u_{it}$$

and $u_{it} = \mu_i + v_{it}$,

⁴ The distinction between an empirically observed IRM and a pure margin that induces the need for control variables is common to dealership models in the line of Ho and Saunders (1981). In this context, see also Angbazo (1997), Saunders and Schumacher (2000) or Maudos and Fernández de Guevara (2004).

⁵ Balance sheet data stem from the monthly balance sheet report (MAUS), profit and loss data are derived from the quarterly profit and loss report (QUAB).

⁶ Note that the estimation of a static fixed or random effects model would result in biased and inconsistent parameter estimates for a dynamic relationship. Given the fact that such a bias decreases with T and the time dimension $T=10$ of our sample, we estimated a fixed effects model to check for the robustness of our results – a Hausmann test provided evidence for the use of an FE model instead of an RE model. Although biased, the FE model by and large underscores the results of this paper.

where δ is the coefficient of the lagged dependent variable, α_k are the K coefficients of the variables determining the pure interest rate margin PIM_{it} , β_l are the L coefficients of the bank-specific control variables and γ_m are the M coefficients of the industry-specific and macro control variables that are constant over all banks in a given year. u_{it} consists of the individual effect μ_i and the residual term v_{it} .⁷

Empirically, the *interest rate margin* is net interest income in relation to total assets. The determinants of the pure interest rate margin discussed above are proxied empirically by the following variables:

- The *degree of risk aversion* is captured by the regulatory capital ratio. A higher ratio means a greater distance to regulatory minimum standards and thus higher risk aversion.
- The *competitive structure* of the market is captured by the average Lerner index for the banking market in a given year and is calculated according to Angelini and Cetorelli (2003). The Lerner index is the relative markup of price over marginal costs, i.e. the difference between price and marginal costs in relation to price. To obtain the Lerner index, the following system was estimated simultaneously⁸ for each year from 1996 to 2005.

$$\begin{aligned} \ln c_i &= k_0 + s_1 \ln x_i + \frac{s_2}{2} (\ln x_i)^2 + \\ &+ \sum_{j=1}^3 k_j \ln \omega_{ij} + \sum_{j=1}^3 s_{j+2} \ln x_i \ln \omega_{ij} + \\ &+ k_4 \ln \omega_{i1} \ln \omega_{i2} + k_5 \ln \omega_{i1} \ln \omega_{i3} + \\ &+ k_4 \ln \omega_{i2} \ln \omega_{i3} + \sum_{j=1}^3 k_j (\ln \omega_{ij})^2 \end{aligned}$$

$$\begin{aligned} p_i &= s_0 + \\ &+ \frac{c_i}{x_i} \left(s_1 + s_2 \ln x_i + \sum_{j=1}^3 s_{j+2} \ln \omega_{ij} \right), \end{aligned}$$

where c_i are total costs, x_i are total assets, ω_{i1} are the costs of funding (interest expenses in relation to deposits), ω_{i2} are the costs of labor (personnel expenses in relation to the number of employees) and ω_{i3} are the costs of physical capital (operating expenses net of personnel costs in relation to total assets) of bank i . The first equation thereby is the translog cost function used to obtain marginal costs, the second equation is the first order condition of profit maximization used to obtain the markup over price (captured by s_0). p_i is the sum of interest revenues and fee-based income in relation to total assets. The average degree of competition in a given year is calculated by dividing the estimation of s_0 by the average p over all banks in a year.

⁷ Given the presence of large differences in the size of individual banks, heteroskedasticity could be a problem in our sample. We control for this by using a robust estimator of the variance-covariance matrix of the parameter estimates. Furthermore, to make sure nonstationarity does not affect our data, we performed the panel data unit root test according to Maddala and Wu (1999), which results in the rejection of the null hypothesis of nonstationarity. The respective test statistics can be obtained from the authors upon request.

⁸ Because of the endogeneity of the cost and price variables, c_i and p_i , we used instrumental variables in a framework of a three-stage least-squares estimation.

- *Interest rate risks* are captured by the standard deviation of daily short-term money market rates over a year, our choice being the three-month Euribor (or Vibor before 1999). Alternatively, we will check for the robustness of our results using the slope of the term structure (the difference between a year’s average of ten-year government bond yields and the three-month Euribor) and the standard deviation of ten-year government bond yields as interest rate risk proxies.
 - *Credit risks* are captured by the ratio of loan loss provisions to customer loans or (again as a robustness exercise) by the ratio of risk-weighted assets to total assets.
 - The *interaction of credit risks and interest risks* is covered by introducing an interaction term between the respective interest rate risk and credit risk specifications.
 - The *operating costs* are simply operating expenses in relation to total assets.
 - The *average size of operations* is captured by dividing the amount of customer loans by the number of customer loans and complemented by the diversification of the loan portfolio measured by the Herfindahl-Hirschman index over each bank’s individual loan portfolio for every bank in every year.⁹
- In order to capture empirical deviations from pure margins we account for the following factors: *Payments of implicit interest rates* are calculated by dividing fee income on credit operations by total assets, the *quality of management* is proxied by the cost/income ratio, *economies of scale* are captured by a bank’s market share in a given year, the *importance of noninterest revenues* is calculated by the ratio of noninterest revenues to total assets or, alternatively, – and again as a robustness check – to total revenues, and the change in *economic conditions* is proxied by the deviation of Austria’s real GDP growth rate in a given year from its average over the sample period. To obtain a useful proxy for the *degree of relationship banking*, we use the sum of customer loans with a volume below EUR 500,000 (below EUR 360,000 before 2002) in relation to total assets. The underlying rationale for this choice is the argument that the kind of information asymmetries typically encountered with relationship loans will likely decrease with the size of loans (see also Ergungor, 2005, in this context).¹⁰ Since foreign currency lending is a unique feature in Austrian banking and gained particular importance during the observation period

⁹ Our diversification measure is based on OeNB’s Major Loans Register, which has the shortcoming that only loans in excess of EUR 350,000 are reported; thus, the picture for small banks that have only a few (or even only one) loan above this threshold is potentially distorted. Estimation results based on a subsample that excludes these smaller banks (with total assets below EUR 70 million), however, do not alter the results. Therefore, we include diversification in addition to the average size of operations in order to capture information on the granularity of the loan portfolio.

¹⁰ We acknowledge that, despite drawing on a unique database, this indicator is relatively crude. We are aware of the fact that not all small loans are relationship loans and not all relationship loans are small. However, we follow the argument that the larger the company is, the lower the resulting information asymmetry is (not least owing to more sophisticated and documented management systems) – a fact which results either in capital market financing or transaction-based bank lending.

described here, we also control for the *influence of foreign currency loans* by using the share of foreign currency loans to all loans granted to customers for each bank.

Table 1 shows the evolution over time of the explained variable and all the explanatory variables in our sample for the years from 1996 to 2005, with medians used for bank-specific variables. The IRM shows a decreasing trend ranging from just over 3% in 1996 to 1.9% in 2005. During the same period, competition in the Austrian banking system increased markedly, with the Lerner index (LERNER) of the banking system decreasing from 51% to 40%. Along with rising competition, operating costs (OPC) decreased steadily from

2.7% in 1996 to 2.3% in 2005. In terms of interest rate risk, the one-year standard deviation of the three-month Euribor (STD3M) increases until 2000 and decreases thereafter. The slope term (SLOPE) follows a similar pattern, the standard deviation of the ten-year bond yield (STD10Y), however, moves in the opposite direction of the three-month Euribor for most of the years under observation. In contrast to interest rate risk, credit risk, as measured by the loan loss provisions ratio (LLPR), went up during the sample period, a pattern by and large followed by the risk-weighted assets (RWATOTASS). The average size of operations (ASO) augmented steadily from EUR 17,000 to EUR 29,000, and the concentra-

Table 1

Variable Definitions and Sample Medians (for bank-specific variables)

Symbol	Definition	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
IRM, %	Net interest income to total assets	3.039	2.882	2.680	2.461	2.712	2.544	2.379	2.189	2.064	1.941
LERNER, %	Lerner index of market power	51.210	48.396	50.657	47.341	51.948	53.926	47.891	42.354	39.280	40.028
OPC, %	Operating costs to total assets	2.694	2.696	2.653	2.558	2.567	2.515	2.460	2.392	2.321	2.192
RAV, %	Regulatory capital ratio	13.115	13.419	13.283	13.108	13.016	13.084	13.306	13.665	15.113	15.868
LLPR, %	Loan loss provisions ratio	3.260	3.470	3.590	3.662	3.904	4.056	4.228	4.238	4.251	4.319
RWATOTASS, %	Risk-weighted assets to total assets	55.435	56.131	56.776	56.836	57.187	57.329	57.188	56.353	56.904	57.776
STD3M	Standard deviation of three-month Euribor	0.154	0.192	0.084	0.331	0.585	0.530	0.148	0.248	0.046	0.112
SLOPE, %	Difference between ten-year government bond yield and three-month Euribor	2.939	2.173	1.118	1.725	1.158	0.800	1.634	1.796	1.982	0.652
STD10Y	Standard deviation of ten-year government bond yield	0.247	0.145	0.378	0.591	0.151	0.200	0.320	0.263	0.213	0.233
CROSSIRR3	Interaction between LLPR and STD3M	0.005	0.007	0.003	0.012	0.023	0.022	0.006	0.010	0.002	0.005
CROSSIRRS	Interaction between LLPR and SLOPE	0.096	0.075	0.040	0.063	0.045	0.032	0.069	0.076	0.084	0.028
CROSSIRR10	Interaction between LLPR and STD10Y	0.008	0.005	0.014	0.022	0.006	0.008	0.014	0.011	0.009	0.010
CROSSIRR3RWA	Interaction between RWA and STD3M	0.085	0.108	0.048	0.188	0.335	0.304	0.085	0.139	0.026	0.065
ASO, EUR	Average size of customer loans	17,272	18,154	19,623	20,935	22,158	23,420	25,458	26,234	27,471	28,685
DIV, %	Herfindahl index of loan portfolio	..	1.993	2.097	2.240	2.281	2.254	2.285	2.474	2.537	2.432
CIR, %	Cost/income ratio	66.636	68.812	70.553	70.059	64.676	67.632	68.396	69.985	70.858	68.867
SIZE, %	Market share	0.013	0.013	0.012	0.013	0.013	0.013	0.014	0.014	0.014	0.013
FCL, %	Share of foreign currency loans to customers	0.185	0.610	2.980	5.548	7.638	9.208	10.347	11.035	12.076	12.735
NONINTREV, %	Noninterest revenues to total assets	0.952	0.997	1.019	1.071	1.143	1.076	1.108	1.077	1.048	1.107
NONINTREV2, %	Noninterest revenues to total revenues	23.881	25.768	27.812	30.719	29.683	30.268	32.346	33.208	33.805	36.243
IIP, %	Fee income on credit operations to total assets	0.022	0.020	0.019	0.019	0.019	0.019	0.021	0.023	0.021	0.020
RLBLOANS, %	Share of lower-volume loans	43.988	44.444	45.147	44.656	44.904	43.663	45.438	43.914	43.864	42.659
GDP_TREND, %	Difference between a year's GDP growth rate and its mean over all years	0.515	-0.285	1.515	1.215	1.315	-1.285	-1.085	-0.685	0.315	-0.185

Source: OeNB, Thomson Financial.

tion of the loan portfolio (DIV) and banks' regulatory capital ratio (RAV) climbed at a similar rate. As already hinted above, the share of foreign currency loans (FCL) rose sharply over the last decade. During this time period, noninterest revenue (NONINTREV) also significantly gained in importance for the median bank, accounting for 36% of all revenues which corresponds to a 52% increase within the sample period (NONINTREV2). The importance of relationship banking loans (RLBLOANS), however, has decreased slightly, especially since 2002.

5 Results

The second column of table 2 shows the estimation results for our reference model (model (1)). To check for the robustness of these results, models using alternative variable definitions (models (2) to (5)) were estimated, too. Model (2) uses the ratio of risk-weighted assets to total assets instead of LLPR as a proxy for credit risk. Models (3) and (4) use different definitions for interest rate risk – the slope of the term structure and the standard deviation of ten-year government bond yields, respectively; model (5) replaces the ratio of noninterest revenues to total assets (NONINTREV) of the base model by the proportion of noninterest revenue in all bank revenues. Econometrically, the null hypothesis of second-order autocorrelation in the first-differenced residuals can be rejected at common inference levels in all our models.

Turning toward the results of our reference model, we can first of all

see that the coefficient of the lagged dependent variable has a significant positive sign and a value of roughly 0.4, which indicates some degree of market imperfections. The presence of market imperfections is also borne out by our estimates for the Lerner index (see table 1) and the fact that the operating cost coefficient takes on significantly positive values.

Relating our results to the predictions of the theoretical margin model, the Lerner index, operating costs, risk aversion and interest rate risk are significant and display the expected positive signs, i.e. the lower competition and the higher average operating costs, risk aversion and interest rate risk the higher is a bank's IRM. These findings are in line with those of Maudos and Fernández de Guevara (2004). In contrast to the theoretical predictions (as well as to e.g. the results of Maudos and Fernández de Guevara, 2004) credit risk has no significant effect on the IRM.¹¹ The average size of operations and the co-movement of interest rate and credit risk have no significant impact on the IRM, either.

In terms of our control variables, the extent of relationship banking yields a significant positive influence on interest rate margins. This, however, is surprising given earlier results on this topic e.g. by Ergungor (2005), who finds no effect of relationship banking on bank IRM. Our results, on the contrary, show that an increase in the share of relationship banking loans to total loans by one percent drives up a bank's IRM by more than 2 basis points in the subsequent period and by roughly 4 basis points in

¹¹ This finding, however, is consistent with the conclusion presented by Jäger and Redak (2006) that Austrian banks did not sufficiently price credit risk in the past.

Table 2

Determinants of Interest Rate Margins, 1996–2005¹

Dependent variable: Net interest margin (NIM)										
	Reference model (1)		(2)		(3)		(4)		(5)	
	Coefficient		Coefficient		Coefficient		Coefficient		Coefficient	
IRM t-1	0.4084	***	0.4132	***	0.3931	***	0.3992	***	0.3790	***
LERNER	0.0062	***	0.0057	***	0.0245	***	0.0129	***	0.0038	**
OPC	0.2118	**	0.2051	**	0.2114	**	0.2029	**	0.0965	**
RAV	0.0016	**	0.0023	***	0.0015	**	0.0013	**	0.0017	**
LLPR	-0.0039		–		-0.0028		-0.0013		0.0010	
STD3M	0.3018	***	0.2154		–		–		0.2477	***
CROSSIRR3	-0.8552		–		–		–		-0.2934	
ASO	2.20e-08		4.10e-08		1.43e-08		3.83e-09		-3.85e-08	
DIV	0.0003		0.0005		0.0004		0.0004		0.0004	
CIR	-0.0093	*	-0.0094	*	-0.0097	*	-0.0087	*	-0.0124	***
SIZE	-0.0396	***	-0.0290	*	-0.0447	***	-0.0421	***	-0.0354	**
FCL	-0.0065	***	-0.0064	***	-0.0069	***	-0.0029	**	-0.0059	***
NONINTREV	-0.2018	**	-0.1990	**	-0.2030	**	-0.1952	**	–	
IIP	-0.1718		-0.1792		-0.1737		-0.1808		-0.2280	
RLBLOANS	0.0240	***	0.0210	***	0.0220	***	0.0250	***	0.0215	***
GDP_TREND	0.0217	***	0.0216	**	0.0408	***	0.0463	***	0.0208	**
CONSTANT	-0.0001		-0.0001		0.0002	**	-0.0001		-7.91e-07	
RWATOTASS	–		0.0081		–		–		–	
CROSSIRR3RWA	–		0.0795		–		–		–	
SLOPE	–		–		0.0875	***	–		–	
CROSSIRRS	–		–		-0.3021		–		–	
STD10Y	–		–		–		-0.4185	***	–	
CROSSIRR10	–		–		–		-0.9378		–	
NONINTREV2	–		–		–		–		-0.0219	***
Number of observations	6,480		6,480		6,480		6,480		6,480	
Number of groups	903		903		903		903		903	
AR(2) ²	0.4834		0.5112		0.1024		0.2169		0.7062	

Source: OeNB, Thomson Financial.

Note: ***, **, * indicate significance at the 1%, 5% and 10% level.

¹ By using first differences and including the lagged dependent variable, two years – i.e. 1,806 out of the original 8,286 observations – are lost.

² p-value of the test whether the average autocovariance in residuals of order 2 is 0.

the long run. At least for Austrian banks, relationship banking enables banks to charge higher margins. Furthermore, our results show that good bank management reduces interest margins, i.e. more efficient banks are apparently able to operate with lower margins than their badly managed counterparts.

Margins also significantly decrease as shares of foreign currency lending and noninterest revenues go up. Although the coefficient is small, the negative impact of foreign currency lending could hinge on the pricing difference these loans exhibit compared with euro-denominated

loans. While euro-denominated loans are usually refinanced at least in parts with deposits in the same currency, foreign currency loans are in general refinanced on the interbank market with a mark-up on interbank rates which contributes to interest income. Furthermore, anecdotic evidence suggests that competition in the foreign currency loans market is particularly high as credit intermediaries are strongly involved in the marketing of foreign currency loans. Additionally, foreign currency loans, which are usually bullet loans, involve the sale of a repayment vehicle (life insurance or investment fund) which

offers the possibility of cross subsidies between interest payment and noninterest revenues. This reasoning might also drive the influence of noninterest revenues on bank margins. Since investment funds and pension products are quickly gaining popularity in Austria (see e.g. Ittner and Schwaiger, 2006), the increasing possibility to cross-sell investment or insurance products to loan holders could justify lower margins for banks. Alternatively, the literature also offers income diversification as a reason why risk-averse banks may reduce their margins as they are able to spread risks across several sources of revenues (see e.g. Stiroh, 2004, or Elsas et al., 2006). A look at model (5) indeed suggests that an increase in the share of noninterest revenues in total revenues by 1 percentage point decreases the interest rate margin of a bank by more than 2 basis points in the next period and by roughly 3.7 basis points in the long run.

Our results show, furthermore, that bank size has a significantly negative influence on IRM, whereas GDP growth apparently has a significant positive impact. Implicit interest payments do not have a significant effect on IRM. The results of our reference model are confirmed by the robustness checks we perform in models (2) to (5). The coefficient of interest rate risk is the only major exception. While the slope of the term structure of the interest rate underpins the results based on the standard deviation of three-month interbank rates, replacing the standard deviation of short-term interbank rates by the standard deviation of ten-year government bond yields leads to a change of sign in the interest rate risk coefficient. Since the standard deviations of ten-year government bond yields and

interbank rates obviously behave very differently (see also table 1), this result should not be surprising.

Returning to the initial question of the reasons for the sharp decline of Austrian banks' IRM over the last decade, we now attempt to isolate the most important driving forces. To this end, we may, for example, combine the changes in the median levels of our model variables (see table 1) with the estimated coefficients of the reference model. The result we thus gain shows that the three most important reasons for the decline in margins over the last decade have been the *fall in operating costs*, the *increase in foreign currency lending* and the *increase in competition*. Although the coefficient of foreign currency lending and the Lerner index are small, the change in these variables over the past ten years makes them important drivers of IRM reductions. The increase in noninterest revenues as well as the reduction in relationship banking should, however, not go unmentioned in this respect, either.

6 Summary

Throughout the EU-25, bank interest rate margins (IRM) have been on the decline over the last decade. Austria is no exception in this regard. Based on the theoretical model of Maudos and Fernández de Guevara (2004), we identify the driving factors behind the dynamics of bank IRM. In fact, the marked reduction of Austrian banks' IRM since 1996 can mainly be attributed to decreasing operating costs, increasing foreign currency loans and rising competition. The growing importance of noninterest revenues and a reduction in the extent of relationship banking drove margins further downward. In this respect, we complement the litera-

ture on relationship banking by documenting that relationship banking enables Austrian banks to charge higher margins.

From a financial stability perspective, the reasons behind the margin decrease therefore predominantly emanate from the micro level. The

past evolution of the drivers of banks' IRM does not suggest that pressures on margins will ease in the future. To avoid risk-shifting problems, banks therefore certainly face the challenge to compensate the decreasing profitability of their interest rate business with noninterest revenues.

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A N N E X O F T A B L E S

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Cutoff date for data: November 10, 2006

Conventions used in the tables:

x = No data can be indicated for technical reasons

.. = Data not available at the reporting date

Revisions of data published in earlier volumes are not indicated.

Discrepancies may arise from rounding.

International Environment

Table A1

Exchange Rates

Period average (per EUR 1)

	2002	2003	2004	2005	2003	2004	2005	2006
	Year				1 st half			
U.S. dollar	0.9452	1.1313	1.2437	1.2443	1.1046	1.2277	1.2852	1.2287
Japanese yen	118.07	130.96	134.40	136.86	131.11	133.07	136.23	142.16
Pound sterling	0.6287	0.6919	0.6786	0.6839	0.6855	0.6736	0.6861	0.6872
Swiss franc	1.4670	1.5210	1.5439	1.5484	1.4920	1.5532	1.5464	1.5613
Czech koruna	30.81	31.84	31.90	29.78	31.55	32.44	30.07	28.49
Hungarian forint	242.95	253.51	251.73	248.04	247.29	256.08	247.38	260.70
Polish zloty	3.85	4.40	4.53	4.02	4.27	4.73	4.08	3.89
Slovak koruna	42.68	41.49	40.03	38.59	41.51	40.32	38.61	37.57
Slovenian tolar	225.93	233.82	239.07	239.57	232.14	238.26	239.64	239.57

Source: Thomson Financial.

Table A2

Key Interest Rates

End of period, %

	2002	2003		2004		2005		2006
	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30
Euro area	2.75	2.00	2.00	2.00	2.00	2.00	2.25	2.75
U.S.A.	1.25	1.25	0.75	1.25	2.00	3.25	4.25	5.25
Japan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
United Kingdom	4.00	3.75	3.75	4.50	4.75	4.75	4.50	4.50
Switzerland ¹	0.25–1.25	0.00–0.75	0.00–0.75	0.00–1.00	0.25–1.25	0.25–1.25	0.50–1.50	1.00–2.00
Czech Republic	2.75	2.25	2.00	2.25	2.50	1.75	2.00	2.00
Hungary	8.50	9.50	12.50	11.50	9.50	7.00	6.00	6.25
Poland	6.75	5.25	5.25	5.25	6.50	5.00	4.50	4.00
Slovak Republic	6.50	6.50	6.00	4.50	4.00	3.00	3.00	4.00
Slovenia ²	8.25	6.50	6.00	4.00	4.00	4.00	4.00	3.25

Source: Eurostat, Thomson Financial, national sources.

¹ SNB target range for three-month LIBOR.² Until January 2003: official interest rate; since February 2003: interest rate for 60-day tolar bills issued by Banka Slovenije.

Table A3

Short-Term Interest Rates								
Three-month rates, period average, %								
	2002	2003	2004	2005	2003	2004	2005	2006
	Year				1 st half			
Euro area	3.32	2.33	2.11	2.19	2.52	2.07	2.13	2.75
U.S.A.	1.80	1.22	1.62	3.57	1.28	1.21	3.06	4.99
Japan	0.09	0.09	0.09	0.09	0.09	0.08	0.09	0.16
United Kingdom	4.01	3.69	4.59	4.70	3.67	4.32	4.85	4.59
Switzerland	1.17	0.33	0.47	0.80	0.41	0.28	0.75	1.25
Czech Republic	3.55	2.28	2.36	2.01	2.46	2.12	2.07	2.10
Hungary	9.21	8.49	11.29	7.02	6.60	11.95	7.86	6.23
Poland	8.99	5.68	6.20	5.29	5.96	5.65	5.97	4.22
Slovak Republic	7.77	6.18	4.68	2.93	6.19	5.31	2.84	3.71
Slovenia	8.03	6.78	4.66	4.03	7.21	5.27	4.05	3.63

Source: Thomson Financial.

Table A4

Long-Term Interest Rates								
Ten-year rates, period average, %								
	2002	2003	2004	2005	2003	2004	2005	2006
	Year				1 st half			
Euro area	4.91	4.14	4.12	3.42	4.06	4.24	3.52	3.79
U.S.A.	4.60	4.00	4.26	4.28	3.76	4.29	4.22	4.81
Japan	1.27	0.99	1.50	1.39	0.70	1.45	1.34	1.74
United Kingdom	4.91	4.58	4.93	4.46	4.35	4.98	4.59	4.26
Switzerland	3.20	2.66	2.74	2.10	2.49	2.82	2.18	2.54
Czech Republic	4.88	4.12	4.75	3.51	3.80	4.75	3.56	3.70
Hungary	7.09	6.82	8.19	6.60	6.29	8.29	6.90	6.91
Poland	7.36	5.78	6.90	5.22	5.40	6.96	5.50	5.06
Slovak Republic	6.94	4.99	5.03	3.52	4.87	5.11	3.68	4.13
Slovenia	x	6.40	4.68	3.81	6.65	4.91	3.91	3.76

Source: Eurostat, national sources.

Table A5

Corporate Bond Spreads								
Period average, percentage points								
	2002	2003	2004	2005	2003	2004	2005	2006
	Year				1 st half			
Euro corporate bond spreads against euro benchmark	1.39	0.68	0.26	0.47	0.95	0.27	0.48	0.63
U.S. dollar corporate bond spreads against U.S. dollar benchmark	6.29	4.82	4.36	3.88	5.39	2.89	2.95	3.26

Source: Thomson Financial.

Table A6

Stock Indices¹

Period average

	2002	2003	2004	2005	2003	2004	2005	2006
	Year				1 st half			
Euro area: EURO STOXX	259.97	213.29	251.14	293.81	198.90	250.68	278.15	347.92
U.S.A.: S&P 500	995.34	964.85	1,131.10	1,207.40	899.26	1,128.13	1,186.94	1,282.07
Japan: Nikkei 225	10,119.31	9,312.88	11,180.88	12,421.34	8,361.43	11,273.45	11,437.04	16,198.92
Austria: ATX	1,183.87	1,305.11	1,979.58	2,996.30	1,208.86	1,833.46	2,662.12	3,947.23
Czech Republic: PX50	437.62	558.24	828.23	1,255.53	505.08	770.53	1,149.26	1,474.91
Hungary: BUX	7,760.47	8,400.75	11,752.24	19,018.01	7,772.15	10,655.10	16,873.74	22,485.36
Poland: WIG	14,431.28	17,103.10	24,108.88	29,567.51	14,485.22	23,365.29	26,810.65	39,932.30
Slovak Republic: SAX16	116.60	164.08	213.42	437.07	156.65	183.01	421.74	405.62
Slovenia: SBI20	2,846.78	3,377.57	4,561.37	4,674.89	3,220.38	4,341.01	4,820.36	4,748.28

Source: Thomson Financial.

¹ EURO STOXX: December 31, 1986 = 100, S&P 500: December 30, 1964 = 100, Nikkei 225: March 31, 1950 = 100, ATX: January 2, 1991 = 1,000, PX50: April 6, 1994 = 100, BUX: January 2, 1991 = 100, WIG: April 16, 1991 = 100, SAX: September 14, 1993 = 100, SBI20: January 1994 = 100.

Table A7

Gross Domestic Product

Annual change in %, period average

	2002	2003	2004	2005	2003	2004	2005	2006
	Year				1 st half			
Euro area	0.9	0.8	1.9	1.4	0.8	1.8	1.3	2.5
U.S.A.	1.6	2.5	3.9	3.2	1.7	4.4	3.2	3.6
Japan	0.1	1.9	2.3	2.6	1.6	3.2	1.9	3.0
Austria	0.9	1.1	2.4	2.0	0.6	1.8	2.5	3.2
Czech Republic	1.5	3.6	4.2	6.1	2.8	4.3	4.9	6.6
Hungary	3.8	3.4	5.2	4.1	2.6	4.5	3.5	4.2
Poland	1.4	3.9	5.3	3.4	3.2	6.3	2.6	5.4
Slovak Republic	4.1	4.2	5.4	6.1	4.1	5.4	5.1	6.5
Slovenia	3.5	2.7	4.2	3.9	2.3	4.5	3.9	5.0

Source: Eurostat, national sources.

Table A8

Current Account

% of GDP, cumulative

	2002	2003	2004	2005	2003	2004	2005	2006
	Year				1 st half			
Euro area	0.8	0.4	0.5	0.1	0.7	-0.3	-0.4	-0.7
U.S.A.	-4.4	-4.6	-5.6	-6.3	-4.9	-5.4	-6.4	-7.1
Japan	3.1	3.5	4.0	3.6	3.1	3.4	3.6	..
Austria	2.6	1.5	2.7	2.9	0.9	1.9	2.1	..
Czech Republic	-5.7	-6.3	-5.2	-2.1	-3.6	-3.8	-0.9	-3.1
Hungary	-7.1	-8.8	-8.8	-6.8	-9.5	-9.4	-7.9	-7.2
Poland	-2.7	-2.2	-4.3	-1.6	-3.1	-5.8	-1.4	-2.1
Slovak Republic	-8.0	-0.8	-3.5	-8.6	-1.3	-2.6	-6.9	-8.0
Slovenia	1.4	-0.4	-2.1	-2.0	-0.7	-2.0	-0.5	-0.4

Source: Eurostat, European Commission, Thomson Financial, national sources.

Note: Due to seasonal fluctuations, the comparability of half-year figures with yearly figures is limited. The half-year figures for the U.S.A. are based on seasonally adjusted nominal GDP data.

Table A9

Inflation								
Annual change in %, period average								
	2002	2003	2004	2005	2003	2004	2005	2006
	Year				1 st half			
Euro area	2.2	2.1	2.1	2.2	2.1	2.0	2.1	2.4
U.S.A.	1.6	2.3	2.7	3.3	2.5	2.3	3.0	3.8
Japan	-0.9	-0.3	0.0	-0.3	-0.2	-0.2	-0.2	0.0
Austria	1.7	1.3	2.0	2.1	1.4	1.7	2.2	1.7
Czech Republic	1.4	-0.1	2.6	1.6	-0.4	2.2	1.3	2.4
Hungary	5.2	4.7	6.8	3.5	4.3	7.1	3.6	2.5
Poland	1.9	0.7	3.6	2.2	0.4	2.6	2.9	1.2
Slovak Republic	3.5	8.4	7.5	2.8	7.7	8.2	2.7	4.4
Slovenia	7.5	5.7	3.6	2.5	6.1	3.7	2.5	2.7

Source: Eurostat.

The Real Economy in Austria

Table A10

Financial Investment of Households

Transactions, EUR million

	2002	2003	2004	2005 ¹	2003	2004	2005	2006 ¹
	Year				1 st half			
Currency and deposits ²	7,624	8,229	6,049	5,471	4,476	2,599	3,275	2,416
Securities (other than shares) ³	1,607	1,449	2,490	1,549	7	1,984	856	1,795
Shares (other than mutual fund shares)	683	831	962	1,778	636	538	1,539	1,638
Mutual fund shares	483	1,119	2,883	3,632	871	2,106	1,499	1,801
Insurance technical reserves	3,119	3,188	4,630	5,870	2,299	2,593	3,340	2,495
Total financial investment	13,516	14,816	17,013	18,301	8,290	9,819	10,509	10,146

Source: OeNB.

¹ Preliminary data.² Including loans and other assets.³ Including financial derivatives.

Table A11

Household Income, Savings and Credit Demand

Year-end, EUR billion

	2002	2003	2004	2005
Year				
Net disposable income	134.4	139.4	145.0	150.5
Savings	10.2	12.1	12.8	13.8
Saving ratio, in % ¹	7.6	8.6	8.8	9.1
MFI loans to households	86.33	89.40	98.33	111.27

Source: Statistics Austria (national accounts broken down by sectors), OeNB (financial accounts).

¹ Saving ratio = savings / (disposable income + increase in accrued occupational pension benefits).

Table A12

Financing of Nonfinancial Corporations

Transactions, EUR million

	2002	2003	2004	2005 ¹	2003	2004	2005	2006 ¹
	Year				1 st half			
Securities (other than shares)	-410	4,299	2,909	4,258	258	1,038	1,063	1,163
Loans	6,360	6,039	4,588	6,802	2,820	854	2,808	4,677
Shares and other equity	7,850	3,608	4,173	6,618	4,466	3,912	4,961	7,441
Other accounts payable	913	2,485	562	549	1,909	118	1,280	844
Total debt	14,713	16,431	12,232	18,227	9,454	5,922	10,111	14,125

Source: OeNB.

¹ Preliminary data.

Table A13

Insolvency Indicators								
	2002	2003	2004	2005	2003	2004	2005	2006
	Year				1 st half			
	EUR million							
Default liabilities	3,422	2,440	2,540	2,426	1,258	1,169	1,034	1,101
	Number							
Defaults	2,864	2,957	2,972	3,203	1,415	1,469	1,552	1,547

Source: Kreditschutzverband von 1870.

Table A14

Selected Financial Ratios of the Manufacturing Sector				
Median, %	2002	2003	2004	2005
Self-financing and investment ratios				
Cash flow, as a percentage of turnover	7.60	7.82	7.38	..
Cash flow, as a percentage of investment	230.45	316.02	405.56	..
Reinvestment ratio ¹	52.08	41.28	36.74	..
Financial structure ratios				
Equity ratio	12.58	14.56	18.55	..
Risk-weighted capital ratio	17.93	19.50	24.78	..
Bank liability ratio	44.16	42.94	37.01	..
Government debt ratio	9.27	9.24	9.20	..

Source: OeNB.

¹ Investment x 100 / credit write-offs.

Financial Intermediaries in Austria¹

Table A15

Total Assets and Off-Balance-Sheet Operations

End of period, EUR million

	2002		2003		2004		2005		2006	
	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30
Total assets	573,349	591,867	605,107	636,035	652,758	697,505	725,761	765,258		
of which: total domestic assets	418,141	419,571	430,888	441,250	452,306	463,815	479,817	493,966		
total foreign assets	155,208	172,296	174,219	194,785	200,452	233,690	245,943	271,292		
Interest rate contracts	1,144,431	2,204,721	1,853,494	1,891,262	1,241,189	1,266,274	1,247,825	1,278,429		
Foreign exchange derivatives	240,542	298,475	305,447	255,755	216,284	245,677	240,564	264,876		
Other derivatives	3,814	4,305	15,173	17,375	8,490	15,916	17,731	21,751		
Derivatives total	1,388,787	2,507,501	2,174,114	2,164,392	1,465,963	1,527,867	1,506,120	1,565,056		
Total assets on a consolidated basis	x	x	x	x	732,780	789,045	847,627	874,322		

Source: OeNB.

Note: Data on off-balance-sheet operations refer to nominal values.

Table A16

Profitability on an Unconsolidated Basis

End of period, EUR million

	2003	2004	2005	2006	2002	2003	2004	2005
	1 st half				Year			
Net interest income	3,497	3,530	3,547	3,563	7,080	7,058	7,131	7,094
Income from securities and participating interests	812	990	1,125	1,198	1,771	1,719	2,076	2,700
Net fee-based income	1,552	1,670	1,903	2,146	3,012	3,187	3,387	3,941
Net profit/loss on financial operations	384	309	333	445	570	618	607	642
Other operating income	591	590	621	709	1,284	1,292	1,255	1,333
Operating income	6,836	7,090	7,530	8,061	13,717	13,874	14,457	15,710
Staff costs	2,368	2,381	2,418	2,624	4,780	4,739	4,859	5,036
Other administrative expenses	1,508	1,511	1,628	1,706	3,139	3,108	3,107	3,332
Other operating expenses	768	780	776	838	1,582	1,620	1,748	1,694
Total operating expenses	4,644	4,672	4,822	5,168	9,501	9,468	9,715	10,063
Operating profit/loss	2,192	2,418	2,708	2,893	4,216	4,406	4,742	5,647
Net risk provisions from credit business ²	x	x	x	1,636	2,164	1,850	2,094	2,014
Net risk provisions from securities business ²	x	x	x	-723	-10	-46	-1,154	-408
Annual surplus ²	x	x	x	3,931	1,400	2,069	3,233	3,734
Return on assets (%) ^{1 2}	x	x	x	1.03	0.24	0.34	0.50	0.51
Return on equity (tier 1 capital; %) ^{1 2}	x	x	x	19.7	5.2	7.0	10.1	10.7
Interest income to gross income (%)	x	x	x	44	52	51	49	45
Operating expenses to gross income (%)	x	x	x	64	69	68	67	64

Source: OeNB.

¹ Annual surplus in % of total assets and tier 1 capital, respectively.² Data referring to the 1st half of 2006 are expected year-end values.

¹ The International Monetary Fund (IMF) publishes Financial Soundness Indicators (FSIs) for Austria from 2007 on (see also www.imf.org). The tables below have therefore been expanded to include FSIs as computed by the OeNB for banks operating in Austria. Figures published here may differ from those published by the IMF, which cover only domestically owned banks.

Table A17

Profitability on a Consolidated Basis								
End of period, EUR million	2003	2004	2005	2006	2002	2003	2004	2005
	1 st half				Year			
Operating income	x	x	10,259	11,713	x	x	19,292	21,153
Operating expenses	x	x	6,490	7,224	x	x	12,472	13,389
Operating profit/loss	x	x	3,769	4,488	x	x	6,821	7,765
Result before minority interests	x	x	2,471	3,712	x	x	4,408	5,341
Return on assets (%) ¹	x	x	0.63	0.72	x	x	0.60	0.63
Return on equity (tier 1 capital; %) ¹	x	x	14.5	18.7	x	x	14.5	15.7
Interest margin to gross income (%)	x	x	63	60	x	x	65	62
Operating expenses to gross income (%)	x	x	63	62	x	x	65	63

Source: OeNB.

¹ Result before minority interests in % of total assets and tier 1 capital, respectively.

Table A18

Sectoral Distribution of Loans										
End of period, EUR million	2002		2003		2004		2005		2006	
	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30
Nonfinancial corporations	111,588	111,178	110,840	108,979	109,924	111,334	108,944	114,171		
of which: foreign currency-denominated claims	19,532	18,177	17,791	17,343	16,094	16,109	14,604	14,006		
Households	84,618	84,723	87,358	93,984	97,130	100,375	107,561	109,255		
of which: foreign currency-denominated claims	22,066	21,810	23,691	27,077	28,461	30,401	33,316	34,395		
General government	28,333	27,501	29,945	29,679	31,238	30,192	29,141	29,856		
of which: foreign currency-denominated claims	1,395	1,567	1,231	1,588	1,688	2,074	2,160	2,159		
Other financial intermediaries	12,771	12,908	13,392	13,505	14,510	15,131	19,365	20,523		
of which: foreign currency-denominated claims	1,466	1,394	1,412	1,594	1,667	2,030	3,216	3,491		
Foreign loans to nonbanks	50,564	50,782	51,585	55,774	56,434	66,163	69,273	74,014		
of which: foreign currency-denominated loans	22,758	22,537	21,658	23,250	22,431	28,140	28,534	29,280		
Nonbanks total	287,874	287,091	293,119	301,921	309,235	323,195	334,283	347,820		
of which: foreign currency-denominated loans	67,217	65,485	65,783	70,851	70,341	78,754	81,830	83,331		
Banks	152,441	169,653	168,915	183,949	182,416	199,908	201,117	218,833		
of which: foreign currency-denominated loans	x	x	x	54,593	49,569	58,368	56,915	62,313		

Source: OeNB.

Note: Due to changes in the reporting system as of the reporting month of June 2004, the time series for nonfinancial corporations and households had to be adjusted. Freelance professionals and self-employed persons are now classified under households. Any remaining breaks in the time series have been adjusted for the growth rates indicated in this report.

Table A19

Foreign Currency-Denominated Claims on Domestic Non-MFIs

End of period, % of total foreign currency-denominated claims on domestic non-MFIs¹

	2002		2003		2004		2005		2006	
	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30
Swiss franc	56.9	72.4	81.6	86.0	90.1	89.3	89.0	89.3	89.0	89.3
Japanese yen	37.7	21.6	12.2	7.1	5.6	5.2	3.9	2.8	3.9	2.8
U.S. dollar	5.0	5.2	5.0	5.6	3.6	4.8	6.3	6.8	6.3	6.8
Other foreign currencies	0.4	0.7	1.2	1.3	0.7	0.6	0.8	1.1	0.8	1.1

Source: OeNB.

¹ The indicated figures refer to claims of monetary financial institutions (MFIs, ESA definition) on domestic non-MFIs. Given the differences in the definition of credit institutions according to the Austrian Banking Act and of MFIs according to ESA and differences in the number of borrowers, comparability to "Claims on Domestic Nonbanks" is limited. Due to rounding, figures do not add up to 100.0% for every year.

Table A20

Loan Quality

	2002		2003		2004		2005		2006	
	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30
End of period, % of claims										
Specific allowances for impaired loans to nonbanks	3.3	3.5	3.3	3.4	3.3	3.2	3.1	3.1	3.1	3.1
Nonperforming loans	3.0	x	3.0	x	2.7	x	2.6	x	2.6	x
End of period, % of tier 1 capital										
Nonperforming loans	65.6	x	59.2	x	53.1	x	52.6	x	52.6	x

Source: OeNB.

Table A21

Market Risk¹

End of period, EUR million and % resp.

	2002		2003		2004		2005		2006	
	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30
Interest rate risk										
Basel ratio for interest rate risk (%) ²	8.8	7.8	7.8	7.5	6.1	6.4	6.6	6.3	6.6	6.3
Capital requirement for the position risk of interest rate instruments in the trading book	415.3	420.6	470.2	514.8	609.8	810.3	703.0	792.6	703.0	792.6
Exchange rate risk										
Capital requirement for open foreign exchange positions	80.4	81.8	54.9	66.1	52.9	97.3	93.3	101.8	93.3	101.8
Maximum open position in open foreign exchange to capital (%) ³	2.8	2.1	2.2	1.1	2.1	3.4	3.2	2.8	3.2	2.8
Equity price risk										
Capital requirement for the position risk of equities in the trading book	20.5	25.4	28.4	52.4	43.4	71.1	95.9	94.0	95.9	94.0

Source: OeNB.

¹ The calculation of capital requirements for market risk combines the standardized approach and internal value-at-risk (VaR) calculations. The latter use previous day's values without taking account of the multiplier. Capital requirements for interest rate instruments and equities are computed by adding up both general and specific position risks.

² Average of the Basel ratio for interest rate risk (loss of present value following a parallel yield curve shift of all currencies by 200 basis points in relation to regulatory capital) weighted by total assets of all Austrian credit institutions excluding banks that operate branches in Austria under freedom of establishment. For banks with a securities trading book, interest rate instruments of the trading book are not included in the calculation.

³ The maximum open position in foreign exchange refers to the monthly peaks of the 12 currencies to be included in the monthly report. A net position is calculated for each currency across all banks. The absolute values of the net positions are added up across currencies.

Table A22

Liquidity Risk

End of period, %

	2002		2003		2004		2005		2006	
	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30
Liquid assets to total assets	x	x	x	x	x	28.1	27.4	27.7		
Liquid assets to short-term liabilities	x	x	x	x	x	71.6	68.0	69.8		
Liquid resources of the first degree: 5% quantile of liquidity ratio ¹	6.1	7.1	4.5	4.3	4.3	4.3	4.5	4.3		
Liquid resources of the second degree: 5% quantile of liquidity ratio	26.1	28.2	25.2	25.7	24.4	24.1	23.7	23.8		

Source: OeNB.

¹ The liquidity ratio relates liquid assets to the corresponding liabilities. Article 25 of the Austrian Banking Act defines a minimum ratio of 2.5 % for liquid resources of the first degree (cash ratio) and of 20% for liquid resources of the second degree (current ratio). The 5% quantile indicates the liquidity level surpassed by 95% of banks on the respective reporting date.

Table A23

Solvency

End of period, eligible capital and tier 1 capital, respectively, as a percentage of risk-weighted assets

	2002		2003		2004		2005		2006	
	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30
Unconsolidated capital adequacy ratio ¹	13.3	13.9	14.5	14.8	14.7	14.6	14.5	15.4		
Unconsolidated tier 1 capital ratio	9.1	9.5	9.9	10.1	10.0	10.1	9.8	10.7		
Consolidated capital adequacy ratio ¹	x	x	x	x	12.2	12.4	11.7	12.4		
Consolidated tier 1 capital ratio	x	x	x	x	8.3	8.7	8.1	8.9		

Source: OeNB.

¹ The capital adequacy ratio refers to the capital eligible as credit risk cover under the Austrian Banking Act (i.e. tier 1 capital plus tier 2 capital minus deduction items) as a percentage of the assessment base. As tier 3 capital is subordinated capital that may only be allocated against market risk, it was not included here so as to produce a conservative capital adequacy assessment.

Table A24

Assets Held by Austrian Insurance Companies¹

End of period, EUR million

	2002		2003		2004		2005		2006	
	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30
Cash, overnight and other deposits at domestic banks	1,628	3,617	2,106	1,744	2,516	2,472	2,570	3,218		
Domestic debt securities	7,736	8,488	9,101	9,175	8,909	9,238	9,309	9,840		
of which: domestic banks	5,350	6,264	6,824	6,938	7,068	7,519	7,647	8,021		
Equity securities and other domestic securities	15,043	14,648	15,204	15,987	17,359	19,387	21,208	21,754		
Loans	8,055	7,441	7,303	6,733	6,504	5,933	5,724	4,701		
of which: domestic banks	78	137	146	148	161	206	366	407		
Domestic equity interests	3,308	3,550	3,588	3,682	3,906	3,928	3,965	4,315		
Real estate	3,553	3,526	3,573	3,438	3,361	3,340	3,288	3,118		
Foreign assets	15,709	15,597	17,261	19,209	20,691	22,964	25,058	26,439		
of which: debt securities	11,548	11,776	12,755	14,979	15,648	17,002	18,230	19,333		
Custody account claims on deposits on reinsurers	2,042	..	2,149	..	2,260	..	2,163	..		
Other assets	3,329	3,734	3,548	4,068	3,594	4,361	4,048	5,199		
Total assets	60,403	62,320	63,833	65,927	69,100	73,433	77,333	80,339		

Source: OeNB.

¹ Semiannual data exclusive of reinsurance transactions, based on quarterly reports.

Table A25

Assets in Austrian Mutual Funds

End of period, EUR million

	2002		2003		2004		2005		2006	
	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30
Domestic securities	35,953	34,653	34,309	35,405	37,341	43,052	47,032	46,422		
of which: debt securities	22,547	20,743	19,436	19,058	19,025	20,545	20,350	18,302		
equity securities	13,406	13,910	14,873	16,347	18,316	22,507	26,682	28,120		
Foreign securities	60,712	66,706	69,435	75,707	80,505	91,473	100,367	102,876		
of which: debt securities	43,199	48,531	48,952	53,022	56,821	64,635	68,054	69,482		
equity securities	17,513	18,175	20,483	22,685	23,684	26,838	32,313	33,394		
Other assets	6,047	5,774	7,274	7,530	7,441	7,984	9,286	10,232		
Total assets	102,712	107,133	111,018	118,642	125,287	142,509	156,685	159,530		
of which: foreign currency	22,455	22,376	22,178	24,328	24,591	28,085	32,694	32,699		

Source: OeNB.

Table A26

Assets Held by Austrian Pension Funds

End of period, EUR million

	2002		2003		2004		2005		2006	
	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30
Domestic securities	7,200	7,744	8,267	8,770	9,179	9,744	10,112	10,074		
of which: federal treasury bills and notes	0	0	0	0	0	0	0	0		
debt securities	57	56	45	121	108	96	98	89		
mutual fund shares	7,125	7,641	8,159	8,607	9,019	9,579	9,949	9,921		
other securities	18	47	63	42	52	69	65	64		
Foreign securities	353	425	405	460	525	728	1,006	1,010		
of which: debt securities	44	47	44	15	27	70	74	81		
mutual fund shares	279	350	330	417	469	645	906	903		
other securities	30	29	31	28	29	13	26	26		
Deposits	171	164	221	72	125	95	113	150		
Loans	42	67	42	59	83	94	94	99		
Other assets	110	161	143	147	170	196	224	220		
Total assets	7,876	8,562	9,078	9,508	10,082	10,857	11,549	11,553		
of which: foreign currency	195	233	212	236	249	272	312	327		

Source: OeNB.

Table A27

Assets Held by Austrian Severance Funds							
End of period, EUR million	2003		2004		2005		2006
	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30
	Total direct investment	6.29	38.53	64.94	92.25	129.39	158.66
of which: euro-denominated	6.26	38.16	63.99	89.23	122.45	153.83	223.28
foreign currency-denominated	0.00	0.00	0.00	x	x	x	x
accrued income claims from direct investment	0.03	0.37	0.95	x	2.03	3.16	2.37
Total indirect investment	12.07	59.46	123.53	269.59	382.34	537.83	658.09
of which: total of euro-denominated investment in mutual fund shares	11.79	59.19	122.85	266.59	370.40	490.40	608.06
total of foreign currency-denominated investment in mutual fund shares	x	x	x	3.25	11.94	47.43	50.03
Total assets assigned to investment groups	18.37	146.47	188.46	362.10	511.73	696.49	886.45
of which: foreign currency-denominated	x	x	x	4.93	16.85	49.10	52.40

Source: OeNB.

Note: Due to special balance sheet operations total assets assigned to investment groups deviate from the sum of total indirect investments.

Table A28

Transactions and System Disturbances in Payment and Securities Settlement Systems						
Number of transactions in million, value of transactions in EUR billion	2004		2005		2006	
	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31
	ARTIS/TARGET					
Number	1.8	3.7	1.9	4.0	2.1	2.1
Value	4,174.5	8,470.0	5,077.8	10,412.9	5,780.8	5,780.8
System disturbances	4	4	0	8	1	1
Securities settlement systems						
Number	0.5	1.0	0.8	1.9	1.7	1.7
Value	89.8	187.9	157.3	309.8	267.1	267.1
System disturbances	0	0	0	0	0	0
Retail payment systems						
Number	181.1	377.9	197.4	412.3	216.5	216.5
Value	15.4	31.5	15.5	31.1	16.9	16.9
System disturbances	12	17	12	41	25	25
Participation in international payment systems						
Number	3.0	8.8	5.9	12.0	7.5	7.5
Value	578.0	1,101.1	562.0	1,127.4	702.2	702.2
System disturbances	11	15	5	8	1	1

Source: OeNB.

N O T E S

Abbreviations

ARTIS	Austrian Real Time Interbank Settlement (the Austrian RTGS system)	HIS	Institut für Höhere Studien und Wissenschaftliche Forschung – Institute for Advanced Studies, Vienna
A-SIT	Secure Information Technology Center – Austria	IIF	Institute of International Finance
ASVG	Allgemeines Sozialversicherungsgesetz – General Social Security Act	IIP	international investment position
A-Trust	A-Trust Gesellschaft für Sicherheitssysteme im elektronischen Datenverkehr GmbH	IMF	International Monetary Fund
ATX	Austrian Traded Index	ISO	International Organization for Standardization
BCBS	Basel Committee on Banking Supervision (BIS)	IWI	Industriewissenschaftliches Institut – Austrian Institute for Industrial Research
BIC	Bank Identifier Code	JVI	Joint Vienna Institute
BIS	Bank for International Settlements	LIBOR	London Interbank Offered Rate
BOP	balance of payments	M3	broad monetary aggregate M3
BSC	Banking Supervision Committee (ESCB)	MFI	monetary financial institution
CACs	collective action clauses	MRO	main refinancing operation
CEBS	Committee of European Banking Supervisors (EU)	MoU	memorandum of understanding
CEE	Central and Eastern Europe	NACE	Statistical Classification of Economic Activities in the European Community
CEECs	Central and Eastern European countries	NCB	national central bank
CESR	Committee of European Securities Regulators	OeBS	Oesterreichische Banknoten- und Sicherheitsdruck GmbH – Austrian Banknote and Security Printing Works
CIS	Commonwealth of Independent States	OECD	Organisation for Economic Co-operation and Development
CPI	consumer price index	OeKB	Oesterreichische Kontrollbank (Austria's main financial and information service provider for the export industry and the capital market)
EBA	Euro Banking Association	OeNB	Oesterreichische Nationalbank (Austria's central bank)
EBRD	European Bank for Reconstruction and Development	OPEC	Organization of the Petroleum Exporting Countries
EC	European Community	ÖBFA	Austrian Federal Financing Agency
ECB	European Central Bank	ÖNACE	Austrian Statistical Classification of Economic Activities
Ecofin	Council of Economic and Finance Ministers (EU)	POS	point of sale
EEA	European Economic Area	PRGF	Poverty Reduction and Growth Facility (IMF)
EFC	Economic and Financial Committee (EU)	RTGS	Real-Time Gross Settlement
EIB	European Investment Bank	SDR	Special Drawing Right (IMF)
EMS	European Monetary System	SDRM	Sovereign Debt Restructuring Mechanism (IMF)
EMU	Economic and Monetary Union	SEPA	Single Euro Payments Area
EONIA	Euro OverNight Index Average	SPF	Survey of Professional Forecasters
ERM II	Exchange Rate Mechanism II (EU)	STEP2	Straight-Through Euro Processing system offered by the Euro Banking Association
ERP	European Recovery Program	STUZZA	Studiengesellschaft für Zusammenarbeit im Zahlungsverkehr G.m.b.H. – Austrian Research Association for Payment Cooperation
ESA	European System of Accounts	S.W.I.F.T.	Society for Worldwide Interbank Financial Telecommunication
ESAF	Enhanced Structural Adjustment Facility (IMF)	TARGET	Trans-European Automated Real-time Gross settlement Express Transfer
ESCB	European System of Central Banks	Treaty	refers to the Treaty establishing the European Community
ESRI	Economic and Social Research Institute	UNCTAD	United Nations Conference on Trade and Development
EU	European Union	UNO	United Nations Organization
EURIBOR	Euro Interbank Offered Rate	VaR	Value at Risk
Eurostat	Statistical Office of the European Communities	WBI	Wiener Börse Index
FATF	Financial Action Task Force on Money Laundering	WEF	World Economic Forum
Fed	Federal Reserve System	WIFO	Österreichisches Institut für Wirtschaftsforschung – Austrian Institute of Economic Research
FMA	Financial Market Authority (for Austria)	WIIV	Wiener Institut für internationale Wirtschaftsvergleiche – The Vienna Institute for International Economic Studies
FOMC	Federal Open Market Committee (U.S.A.)	WKO	Wirtschaftskammer Österreich – Austrian Federal Economic Chamber
FSAP	Financial Sector Assessment Program (IMF)	WTO	World Trade Organization
FWF	Fonds zur Förderung der wirtschaftlichen Forschung – Austrian Science Fund		
GAB	General Arrangements to Borrow		
GATS	General Agreement on Trade in Services		
GDP	gross domestic product		
GNP	gross national product		
GSA	GELDSERVICE AUSTRIA Logistik für Wertgestionierung und Transportkoordination GmbH (Austrian cash services company)		
HICP	Harmonized Index of Consumer Prices		
HIPC	Heavily Indebted Poor Countries		
IBAN	International Bank Account Number		
IBRD	International Bank for Reconstruction and Development		
ICT	information and communication technology		
IDB	Inter-American Development Bank		
IFES	Institut für empirische Sozialforschung GesmbH (Institute for Empirical Social Research, Vienna)		
Ifo	ifo Institute for Economic Research, Munich		

Legend

- x = For technical reasons no data can be indicated
- .. = Data not available at the reporting date
- = The numerical value is zero or smaller than half of the unit indicated

Note: Apparent arithmetical discrepancies in the tables are due to rounding.

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Monetary Policy & the Economy quarterly

This quarterly publication, issued both in German and English, offers analyses of current cyclical developments, medium-term macroeconomic forecasts and studies on central banking and economic policy topics. It also summarizes the findings of macroeconomic workshops and conferences organized by the OeNB.

Statistiken – Daten & Analysen quarterly

This publication contains brief reports and analyses focusing on Austrian financial institutions, cross-border transactions and positions as well as financial flows. The contributions are in German, with executive summaries of the analyses in English. The statistical part covers tables and explanatory notes on a wide range of macroeconomic and financial indicators. The tables and additional information and data are also available on the OeNB's website in both German and English. This series also includes special issues on selected statistics topics published at irregular intervals.

econ.newsletter quarterly

The quarterly English-language newsletter is published only on the Internet and informs an international readership about selected findings, research topics and activities of the OeNB's Economic Analysis and Research Section. This publication addresses colleagues from other central banks or international institutions, economic policy researchers, decision makers and anyone with an interest in macroeconomics. Furthermore, the newsletter offers information on current publications, studies or working papers as well as events (conferences, lectures and workshops).

For further details see www.oenb.at/econ.newsletter

Financial Stability Report semiannual

Issued both in German and English, the *Financial Stability Report* contains first, a regular analysis of Austrian and international developments with an impact on financial stability and second, studies designed to provide in-depth insights into specific topics related to financial market stability.

Focus on European Economic Integration semiannual

The English-language publication *Focus on European Economic Integration* is the successor publication to *Focus on Transition* (published up to issue 2/2003). Reflecting a strategic regional research priority of the OeNB, this publication is a channel for communicating our ongoing research on Central and Eastern European countries (CEECs) as well as Southeastern European (SEE) countries ranging from economic country studies to studies on central banking issues and related topics. One of the purposes of publishing theoretical and empirical studies in the *Focus on European Economic Integration*, which are subject to an external refereeing process, is to stimulate comments and suggestions prior to possible publication in academic journals.

Workshops – Proceedings of OeNB Workshops three to four issues a year

The *Proceedings of OeNB Workshops* were introduced in 2004 and typically comprise papers presented at OeNB workshops at which national and international experts, including economists, researchers, politicians and journalists, discuss monetary and economic policy issues. Workshop proceedings are available in English only.

Working Papers about ten papers a year

The OeNB's *Working Paper* series is designed to disseminate, and provide a platform for discussing, findings of OeNB economists or outside contributors on topics which are of special interest to the OeNB. To ensure the high quality of their content, the contributions are subjected to an international refereeing process.

Economics Conference (Conference Proceedings) annual

The *Economics Conference* hosted by the OeNB represents an important international platform for exchanging views and information on monetary and economic policy as well as financial market issues. It convenes central bank representatives, economic policymakers, financial market players, academics and researchers. The conference proceedings comprise all papers presented at the conference, most of them in English.

Conference on European Economic Integration (Conference Proceedings) annual

This series, published in English by a renowned international publishing house, reflects presentations made at the OeNB's annual conference on Central, Eastern and Southeastern European issues and the ongoing EU enlargement process (formerly East-West Conference).

For further details see ceec.oenb.at

Annual Report

annual

The *Annual Report* of the OeNB provides a broad review of Austrian monetary policy, economic conditions, new developments in the financial markets in general and in financial market supervision in particular as well as of the OeNB's changing responsibilities and its role as an international partner in cooperation and dialogue. It also contains the OeNB's financial statements.

Intellectual Capital Report

annual

The *Intellectual Capital Report* has been published since 2003 as a review of the OeNB's intellectual capital and its use in the OeNB's business processes and services. The report provides an integrated view of the strategically important management of human, relational, structural and innovation capital; it clarifies the relationships between different types of capital and describes various determinants that influence the OeNB's intellectual capital. The findings of the report serve to assess the consistency of the OeNB's intellectual capital with its knowledge-based strategic orientation.

Publications on Banking Supervision

Guidelines on Credit Risk Management

The increasing use of innovative financial products such as securitization or credit derivatives and the further development of modern risk management methods lead to significant changes in the business environment of credit institutions. The credit sector is particularly affected by these innovations, with internal software systems and relevant business processes having to be adapted to cope with the new environment. “Guidelines on Credit Risk Management” is designed to assist in redesigning the systems and processes within a bank in the course of implementing Basel II.

Rating Models and Validation

www.oenb.at/en/img/rating_models_tcm16-22933.pdf

Best Practices in Risk Management for Securitized Products

www.oenb.at/en/img/lf_securit_engl_tcm16-23501.pdf and

Appendix B: Securitization Framework in Basel II

www.oenb.at/en/img/appendix_b_englisch_06122004_tcm16-23500.pdf

Credit Approval Process and Credit Risk Management

www.oenb.at/en/img/credit_approval_process_tcm16-23748.pdf

Coming soon:

Credit risk mitigation techniques – Legal background in Austria, Poland, Croatia, Slovakia, Slovenia, Czech Republic and Hungary

The guidelines are/will be available at www.oenb.at

Guidelines on Market Risk

Two volumes of this six-volume series of guidelines centering on the various facets of market risk provide information on how the Oesterreichische Nationalbank appraises value-at-risk models and on how it audits the standardized approach. The remaining four volumes discuss in depth stress testing for securities portfolios, the calculation of regulatory capital requirements to cover option risks, the general interest rate risk of debt instruments, and other risks associated with the trading book, including default and settlement risk.

General Market Risk of Debt Instruments

(2nd revised and extended edition)

www.oenb.at/en/img/band1ev40_tcm16-20471.pdf

Standardized Approach Audits

www.oenb.at/en/img/band2ev40_tcm16-20472.pdf

Evaluation of Value-at-Risk Models

www.oenb.at/en/img/band3ev40_tcm16-20473.pdf

Provisions for Option Risks

www.oenb.at/en/img/band4ev40_tcm16-20474.pdf

Stress Testing

www.oenb.at/en/img/band5ev40_tcm16-20475.pdf

Other Risks Associated with the Trading Book

www.oenb.at/en/img/band6ev40_tcm16-20476.pdf

Guidelines on Operational Risk Management

These guidelines describe the features of operational risk, evaluate the significance of this risk category for banks and securities firms, and provide an overview of methods and measures adopted to control operational risks. The guidelines explore the major risk areas and risk control/limitation measures in line with the four causes of operational risk (people, systems, processes, external events) and also assess associated legal risks. Furthermore, the guidelines offer an overview of the methods used to calculate (quantitative and qualitative) capital requirements.

www.oenb.at/en/img/operational_risk_screen_tcm16-49652.pdf

Other Publications**Structured Products Handbook**

www.oenb.at/en/img/phb_internet_tcm16-11173.pdf

The first part of the “Structured Products Handbook” deals with structured bonds whose payoff properties depend on interest rate movements, and the following two parts focus on products whose payoff characteristics are shaped by equity prices and foreign exchange rates.

New Quantitative Models of Banking Supervision

www.oenb.at/en/img/new_quantitative_models_of_banking_supervision_tcm16-24132.pdf

Guidelines on Bank-Wide Risk Management

The Guidelines on Bank-Wide Risk Management (Internal Capital Adequacy Assessment Process) give a detailed overview of assessment procedures in all major risk categories. They provide in-depth information on the different types of capital and their suitability for risk cover. Moreover, the guidelines present quantitative methods and procedures to determine the risk-bearing-capacity of a credit institution. A separate section highlights the significance of having a limit system in place that is adequate in a given risk scenario and underscores the need for efficient internal control mechanisms.

www.oenb.at/de/img/icaap_leitfaden_tcm14-38311.pdf

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